Indiana Trauma Registry

Statewide Quarter 3 Data Report
July 1, 2016—September 30, 2016
10,494 Incidents

100 Total Hospitals Reporting

Level I and II:	10 facilities	48.6% of data
Level III:	10 facilities	14.7% of data
(Non-Trauma) Hospitals:	80 facilities	36.7% of data

For Quarter 3 2016, which spanned from July 1, 2016—September 30, 2016 there were 10,494 incidents reported to the Indiana Trauma Registry at the Indiana State Department of Health. There were 100 hospitals that reported data, of which 10 were level I or II trauma centers, 10 were level III trauma centers and 80 were non-trauma centers. There were 4 hospitals that either started to report again or were new to reporting during this quarter compared to the previous quarter, while 2 hospitals dropped off from reporting. A map of the state with the reporting hospitals can be found on page 17. Trauma centers represented 63% of the data. There were 3,756 incidents reported for July, 3,382 reported for August, and 3,356 incidents reported for September.

The content of this report has changed due to suggestions and additions requested by the Indiana State Trauma Care Committee at the February 17, 2017 meeting. Explanations of the changes requested and adapted from the ISTCC meeting can be found on page 18.

Some general reminders include that the blue columns represent an Indiana average, red columns represent level I and II trauma centers, green columns represent level III trauma centers and orange non-trauma centers. If a single percent is listed above a group of bars, the percent listed represents the average for Indiana. If a number is listed above a group of bars, it represents the count for Indiana. The category 'All Transfers' denotes the patient group where ED Disposition = Transferred to Another Hospital. **The category 'Linked Transfers' represents the patient group for whom the initial hospital and final hospital information could be linked.**

Definitions:
Direct Admit: Patient is admitted directly to the hospital and does not spend time in Emergency Department. The ED Length of Stay should reflect a direct admittance.
External Cause of Injury: ICD-10-CM codes that are used to describe the mechanism or external factor that caused the injury event.
Trauma Type: The classification of the force applied to the body. Trauma type categories include blunt, penetrating, thermal, and other trauma.
Injury Severity Score: An anatomical scoring system defined as the sum of the three highest squared maximum Abbreviated Injury Scale (AIS) values to account for multiple injuries in the six body regions.

Formulas:

Acronyms:

ED: Emergency Department	MVC: Motor Vehicle Collision
ICU: Intensive Care Unit	OR: Operating Room
ISS: Injury Severity Score	Ps: Probability of Survival
LOS: Length of Stay	Level I, II and III: Verified and In
NTC: Non-trauma Center	Process Trauma Centers
	CAHs: Critical Access Hospital

Calculations:

$Ps = 1/(1+e^{-b})$ where $b = b_o + b1(RTS) + b2(ISS) + b3(Age\ Index)$

Total GCS = Verbal GCS + Motor GCS + Eye GCS

RTS = 0.94*GCS + 0.73*SBP + 0.29*RR

$ISS = (AIS)^2 + (AIS)^2 + (AIS)^2$

Indiana State Department of Health
Trauma and Injury Prevention

Indiana Trauma Registry

Statewide Quarter 3 Data Report
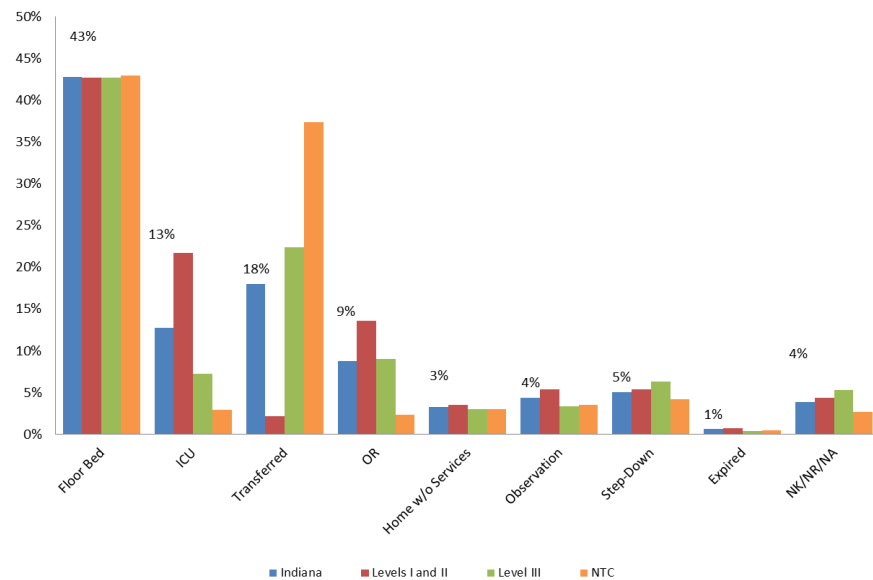**July 1, 2016—September 30, 2016**
10,494 Incidents

100 Total Hospitals Reporting

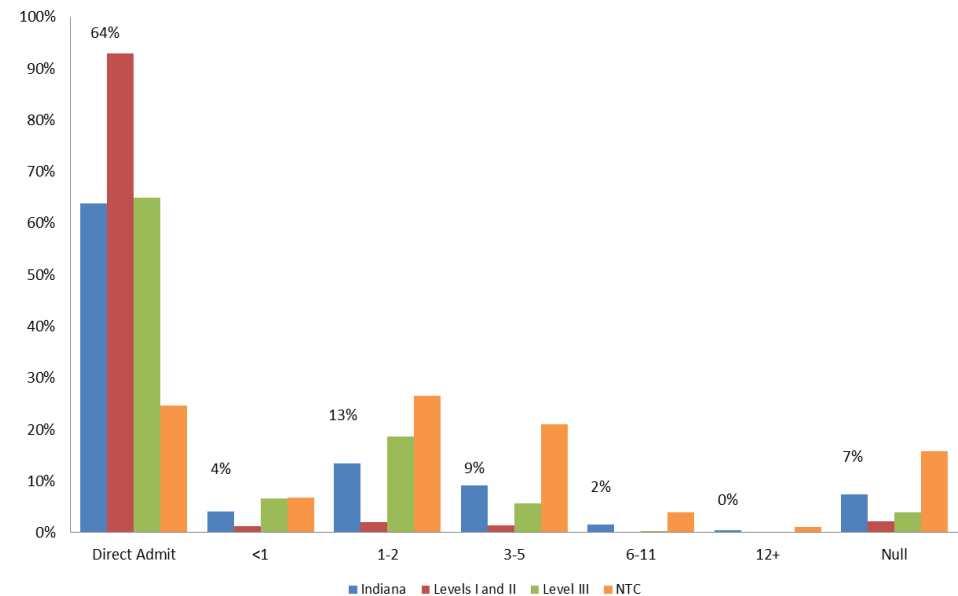|		
Level I and II:	10 facilities	48.6% of data
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ED Disposition by Percentage

ED Length of Stay (Hours)

2

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ED Disposition for ED LOS >12 Hours
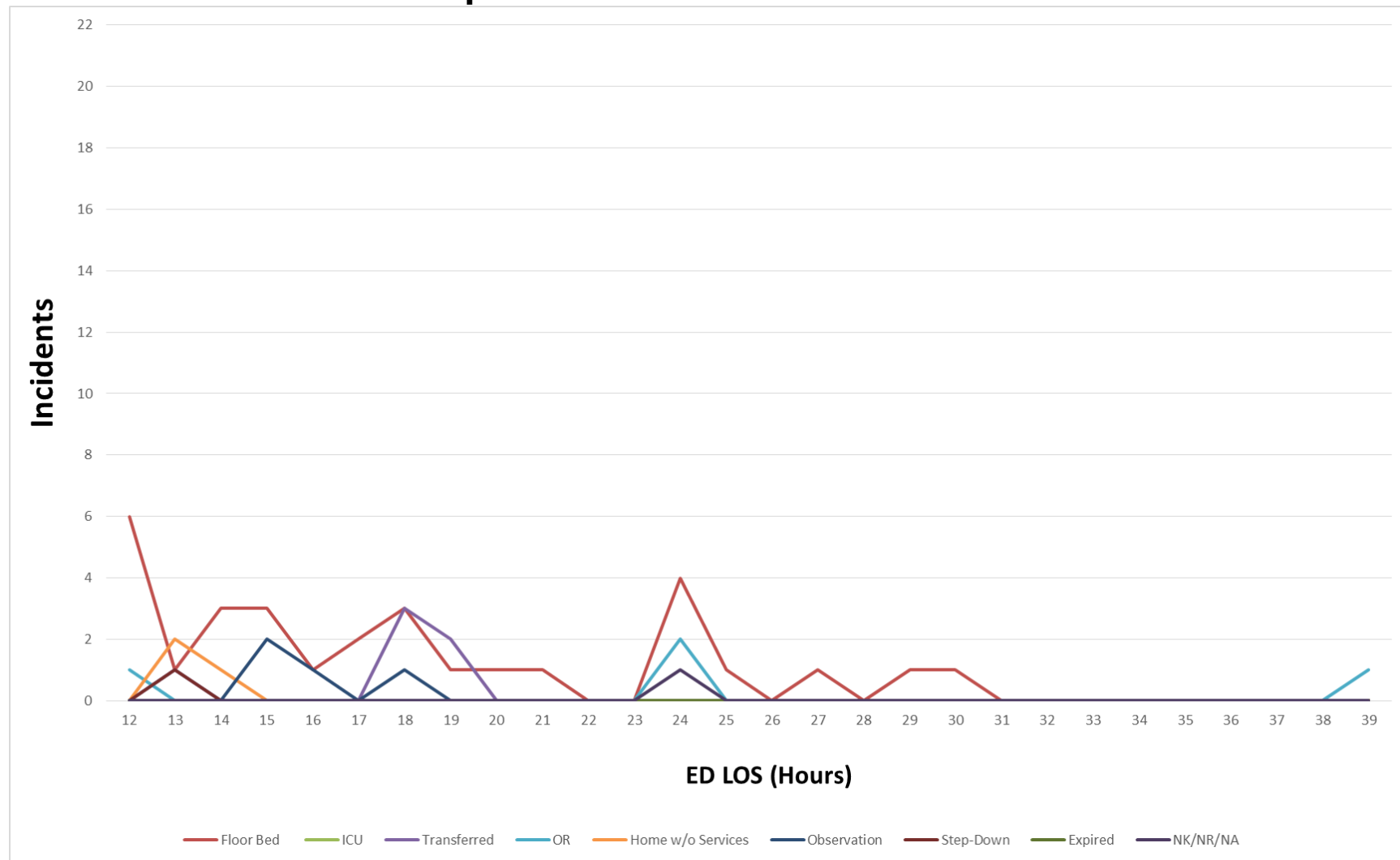
N=45   *No cases expired

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ED LOS > 12 Hours, N=45

Facilities	3 Level I and II 0 Level III 42 Non-trauma Centers	**Region**	10 North; 16 Central; 16 South; 3 Unknown
Average Distance from Scene to Facility	13.1 Miles	**ISS**	25 (1-8 cat); 11 (9-15 cat); 3 (16-24); 6 (No ISS)
Transport Type	26 Ambulance; 15 Private Vehicle; 1 Police; 3 Unknown	**GCS Motor**	1 (5 cat); 33 (6 cat); 11 (unknown)
Cause of Injury	6 Transport; 32 Falls; 3 Inanimate Mech. Forces; 4 Unknown	**RTS—Systolic**	4 (3-4)
Signs of Life	45 Yes	**RTS—Resp. Scale**	3 (3-4)
Age	56.6 Years (1-95 Years)	**Resp. Assistance**	0 Yes; 10 No; 35 Unknown
Gender	21 Female; 24 Male	**ED LOS**	19.2 (12-39)
Interfacility Transfer	4 Yes; 41 No	**ED Disposition**	27 Floor; 3 Home without services; 4 Observation; 3 OR; 1 Step-down; 6 Transferred; 1 Not Applicable

-Region was created from injury zip code. Missing = no injury zip or injury zip from out of state.
-Numbers represent counts per category or mean with minimum and maximum in parentheses.
-No signs of life is defined as having none of the following: organized EKG activity, papillary responses, spontaneous respiratory attempts or movement, and unassisted blood pressure. This usually implies the patient was brought to the ED with CPR in progress (2015 Trauma Registry Data Dictionary, page 185).

Indiana Trauma Registry

Statewide Quarter 3 Data Report
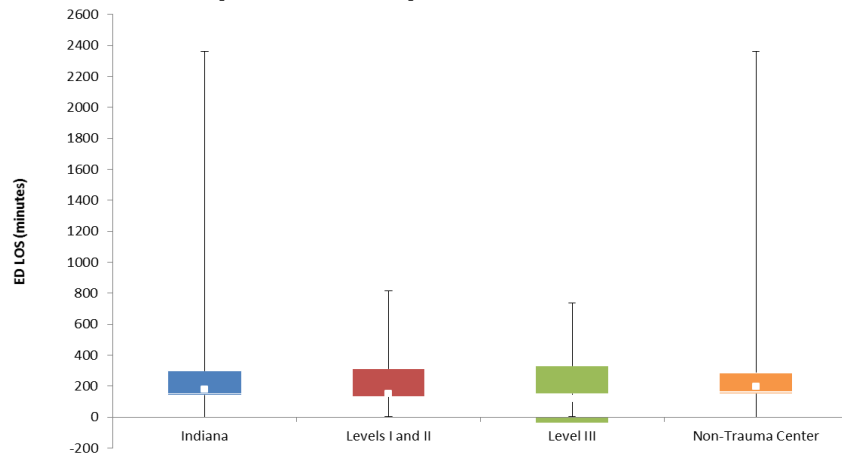### July 1, 2016—September 30, 2016
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ED LOS (Minutes) - All Patients
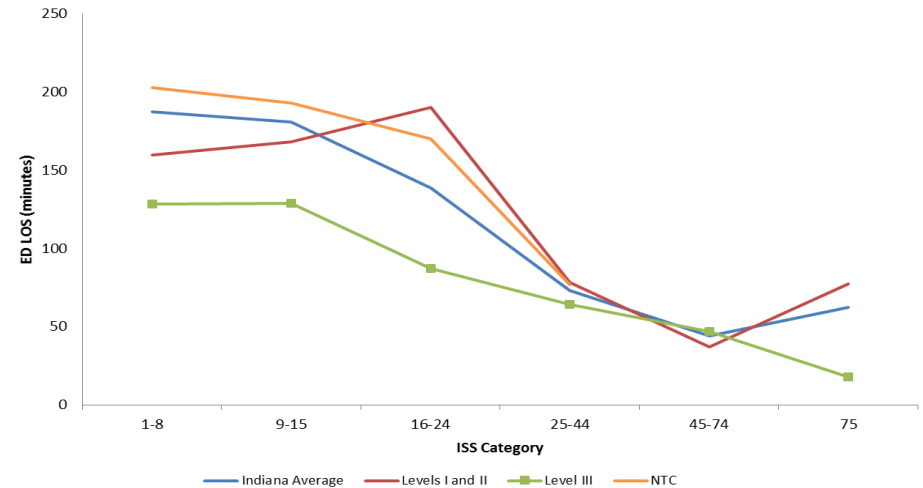
A table with all the values for ED LOS is found on page 52.

ED LOS (Minutes) by ISS

Note for EDLOS by ISS, there were 23 cases with ISS of 75; none were at a non-trauma center.
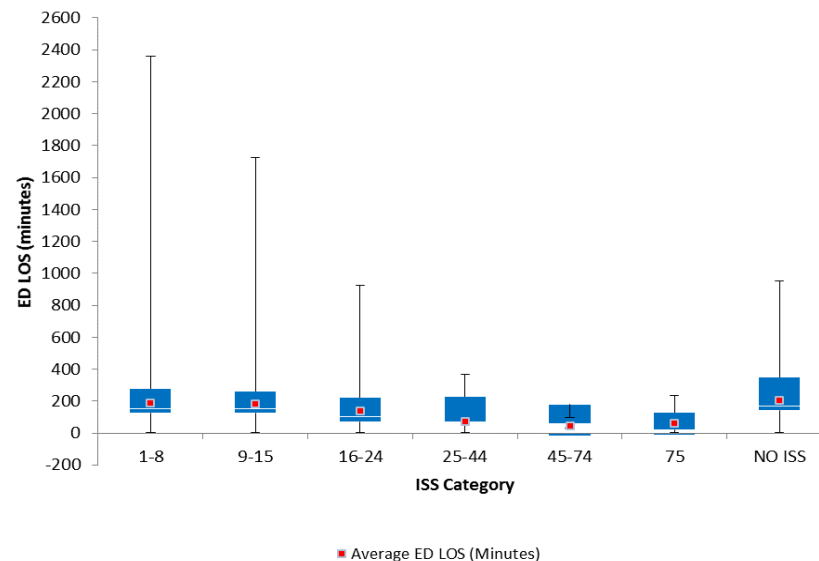
ED LOS (Minutes) by ISS

A table with values for ED LOS by ISS may be found on page 52

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Hospital Disposition
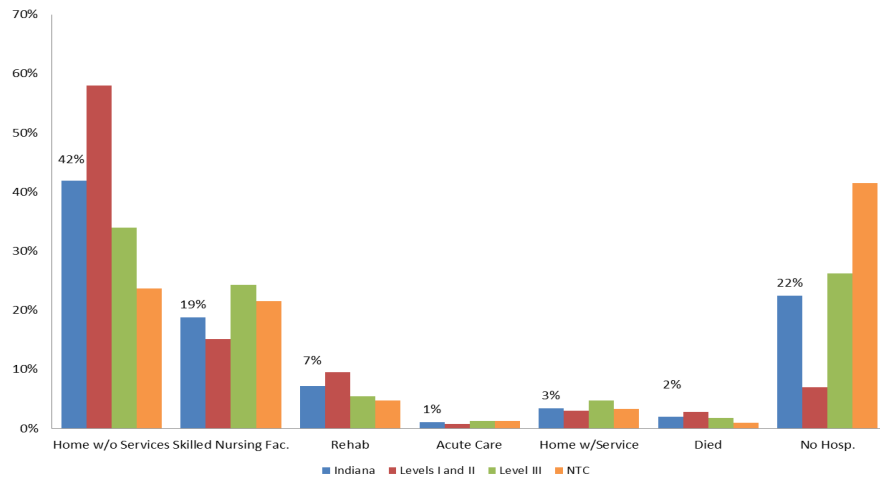
Hospital dispositions with <1% included: Another institution, Null, Psychiatric Hospital, Long-Term Care Hospital and Intermediate Care

Hospital Length of Stay (days)

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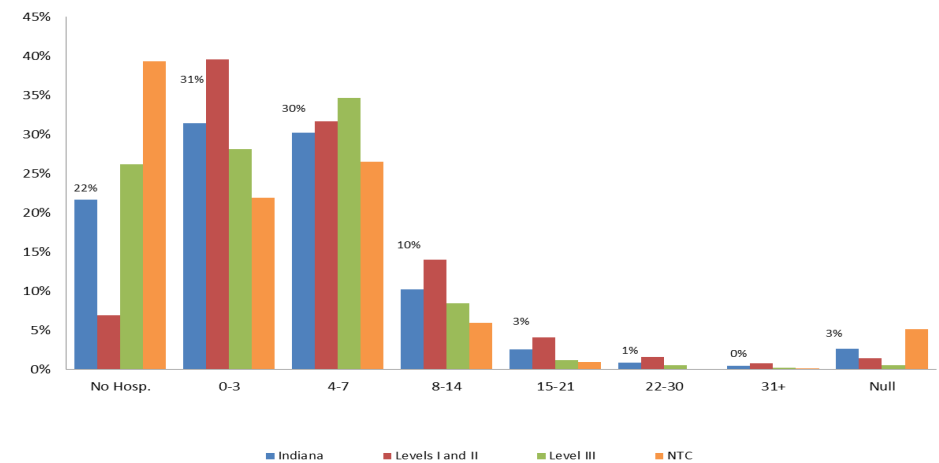|		
Level I and II:	10 facilities	48.6% of data
Level III:	10 facilities	14.7% of data
(Non-Trauma) Hospitals:	80 facilities	36.7% of data

For Quarter 3 2016, of the 10,494 incidents reported to the Indiana Trauma Registry, 1,891 cases that had an ED Disposition of "Transferred to another acute care facility" at the initial facility or that had the Inter-Facility Transfer equal to "Yes" at the Trauma Center. Of those transferred, 734 cases were probabilistically matched. The linked cases make up 17% of the Q3 2016 data. All public health preparedness districts are represented. The diagram below illustrates the overlap between the transfers reported from the initial facility and from the final facility that can be matched.

Initial Facility: 1,891 Incidents

Matched: 734 Incidents

Final Facility: 2,162 Incidents
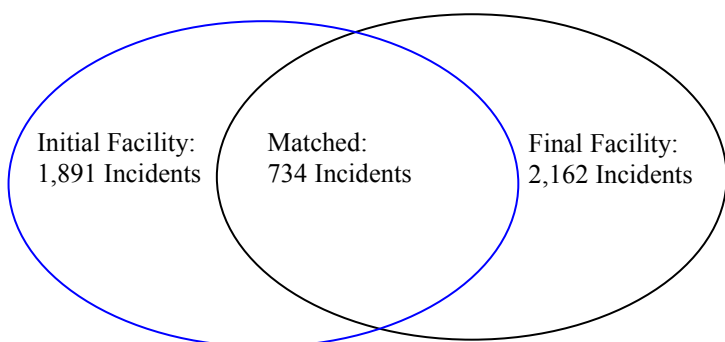
The initial facility in which transfers come from may be considered Critical Access Hospitals (CAHs). All Indiana CAHs are considered Rural, and must meet additional requirements to have a CAH designation, such as having no more than 25 inpatient beds and being located in a rural area. Facilities that are highlighted indicate that these facilities reported data for Quarter 3 2016.

Within this transfer data section, the purple columns represent the transfer cases and the single percentages represent the percent for the transfer cases. For two demographic variables, patient age groupings and gender, the Indiana average is included to provide more insight to this transfer population.

Indiana Critical Access Hospitals (CAHs)

Adams Memorial Hospital	Perry County Memorial Hospital
Cameron Memorial Community Hospital Inc	Pulaski Memorial Hospital
Community Hospital of Bremen Inc	Putnam County Hospital
Decatur County Memorial Hospital	Rush Memorial Hospital
Dukes Memorial Hospital	Scott Memorial Hospital
Gibson General Hospital	St. Mary's Warrick Hospital
Greene County General Hospital	St. Vincent – Clay Hospital
Harrison County Hospital	St. Vincent – Dunn Hospital
IU Health Bedford Hospital	St. Vincent – Frankfort Hospital
IU Health Blackford Hospital	St. Vincent – Jennings Hospital
IU Health Paoli Hospital	St. Vincent – Mercy Hospital
IU Health Tipton Hospital	St. Vincent – Randolph Hospital
IU Health White Memorial Hospital	St. Vincent - Salem Hospital
Jasper County Hospital	St. Vincent – Williamsport Hospital
Jay County Hospital	Sullivan County Community Hospital
Margaret Mary Community Hospital Inc	Union Hospital Clinton
Parkview LaGrange Hospital	Woodlawn Hospital
Parkview Wabash Hospital	

Rural Hospitals

Columbus Regional Hospital	Kosciusko Community Hospital
Daviess Community Hospital	Major Hospital
Fayette Regional Health System	Marion General Hospital
Franciscan Health-Michigan City	Memorial Hospital (Logansport)
Franciscan Health-Crawfordsville	Memorial Hospital & Health Care Center (Jasper)
Good Samaritan Hospital	Parkview Noble Hospital
Henry Community Health	Reid Health
IU Health – LaPorte Hospital	St. Joseph's Regional Medical Center – Plymouth
IU Health – Starke Hospital	Schneck Medical Center
King's Daughters' Health	

Indiana Trauma Registry
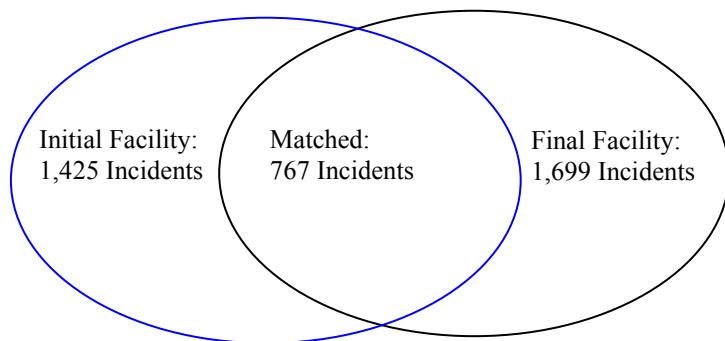
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|		
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Historical Links

For Quarter 4, 2015, of the 8,728 incidents reported to the Indiana Trauma Registry, 1,425 cases that had an ED Disposition of "Transferred to another acute care facility" at the initial facility or that had the Inter-Facility Transfer equal to "Yes" at the Trauma Center. Of those transferred, 767 cases were probabilistically matched. The linked cases make up 25% of the Q4 2015 data. All public health preparedness districts are represented. The diagram below illustrates the overlap between the transfers reported from the initial facility and from the final facility that can be matched.

Initial Facility: 1,425 Incidents

Matched: 767 Incidents

Final Facility: 1,699 Incidents
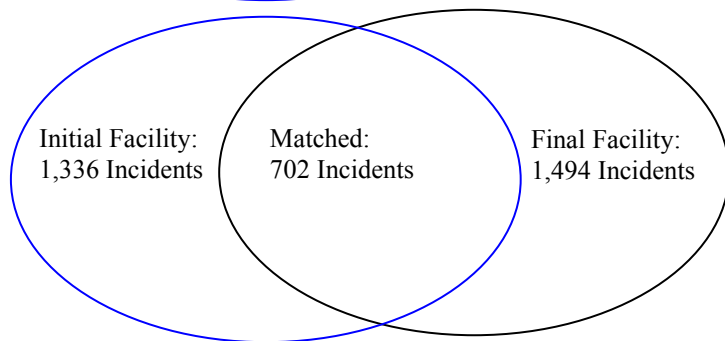
For Quarter 1, 2016, of the 8,077 incidents reported to the Indiana Trauma Registry, 1,336 cases that had an ED Disposition of "Transferred to another acute care facility" at the initial facility or that had the Inter-Facility Transfer equal to "Yes" at the Trauma Center. Of those transferred, 702 cases were probabilistically matched. The linked cases make up 25% of the Q1 2016 data. All public health preparedness districts are represented. The diagram below illustrates the overlap between the transfers reported from the initial facility and from the final facility that can be matched.

Initial Facility: 1,336 Incidents

Matched: 702 Incidents

Final Facility: 1,494 Incidents
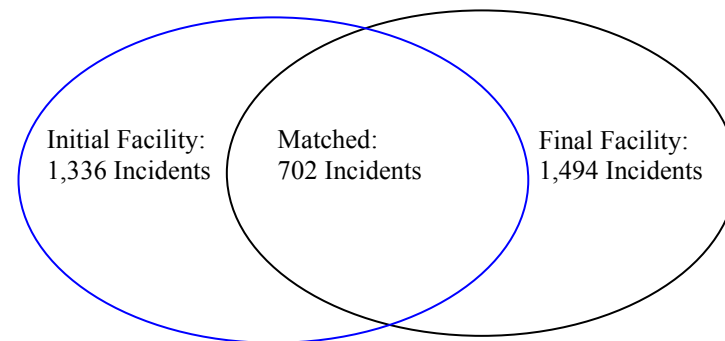
For Quarter 2, 2016, of the 9,188 incidents reported to the Indiana Trauma Registry, 1,676 cases that had an ED Disposition of "Transferred to another acute care facility" at the initial facility or that had the Inter-Facility Transfer equal to "Yes" at the Trauma Center. Of those transferred, 787 cases were probabilistically matched. The linked cases make up 23% of the Q2 2016 data. All public health preparedness districts are represented. The diagram below illustrates the overlap between the transfers reported from the initial facility and from the final facility that can be matched.

Initial Facility: 1,336 Incidents

Matched: 702 Incidents

Final Facility: 1,494 Incidents

Indiana Trauma Registry

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Facility to Facility Transfers

For Transfer Patients:		
Initial Hospital Type	**Final Hospital Type**	**Incident Count**
Critical Access Hospital	Rural	2
Trauma Center	Hospital	2
Hospital	Hospital	13
Critical Access Hospital	Hospital	16
Critical Access Hospital	Trauma Center	85
Rural Hospital	Trauma Center	98
Trauma Center	Trauma Center	142
Hospital	Trauma Center	376

Facility Transfer Type

Rural = Rural Hospital; TC = ACS Verified or In Process Trauma Center;

CAH = Critical   Access Hospital; Hospital = does not fall into above categories

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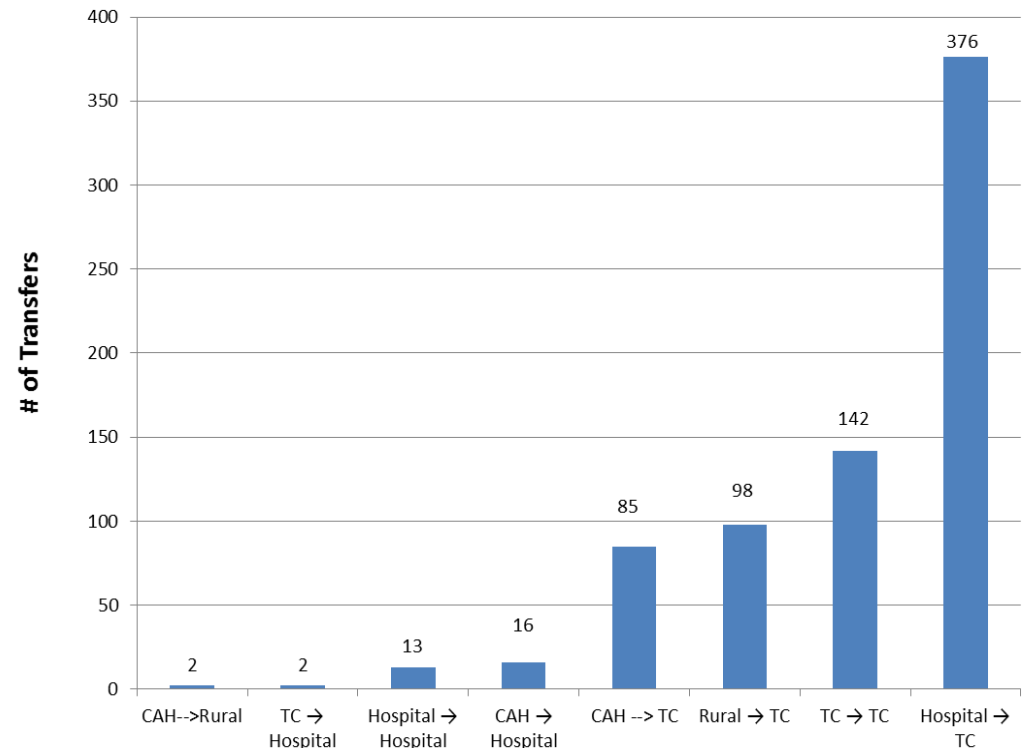Level I and II: 10 facilities   48.6% of data
Level III: 10 facilities   14.7% of data
(Non-Trauma) Hospitals: 80 facilities   36.7% of data

For Linked Transfer Patients:

For Transfer Patients:				
	All Transfer Patients	Critical*	Physiological Critical**	ISS Critical***
Number of Patients	734	253	200	76
EMS Notified to Scene	8.4 minutes	8.4 minutes	8.5 minutes	8.8 minutes
EMS Scene Arrival to Departure	24.3 minutes	14.8 minutes	14.2 minutes	15.8 minutes
EMS Scene Departure to Initial Hospital ED Arrival	24.5 minutes	36.6 minutes	44.6 minutes	17.2 minutes
Initial Hospital ED Arrival to Departure	2 hours 1 minute	1 hour 45.9 minutes	1 hour 45.9 minutes	1 hour 45.5 minutes
Initial Hospital ED Departure to Final Hospital ED Arrival	2 hours 6.1 minutes	1 hour 58.2 minutes	2 hours 4.3 minutes	1 hour 43.8 minutes
TOTAL TIME	5 hours 4.3 minutes	4 hours 43.9 minutes	4 hours 57.5 minutes	4 hours 11.1 minutes

*Critical patient is defined as having a GCS ≤ 12, OR Shock Index > 0.9 OR ISS >15 at the initial hospital.

**Physiological Critical Transfer patient is defined as having a Shock Index > 0.9 OR GCS ≤ 12 at the initial hospital.

***ISS Critical Transfer patient is defined as having an ISS > 15 at the initial hospital

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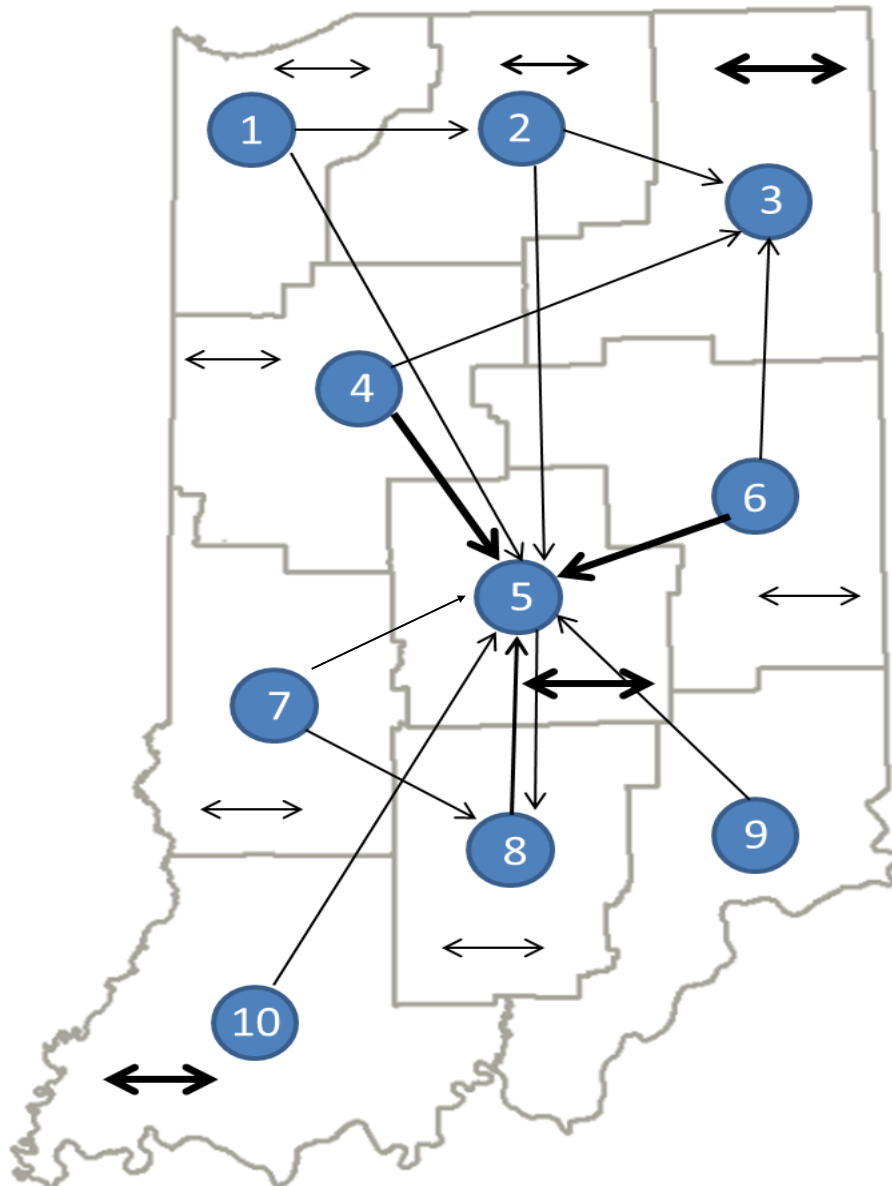
For Transfer Patients:		
Public Health Preparedness District Initial Hospital	**Public Health Preparedness District Final Hospital**	**Incident Counts**
1	1	3
1	2	17
1	4	2
1	5	8
2	2	17
2	3	1
2	5	6
3	3	150
3	5	1
4	3	4
4	4	9
4	5	45
5	5	127
5	8	1
6	3	9
6	5	123
6	6	5
7	5	34
7	7	18
8	5	45
8	7	1
8	8	7
8	10	2
10	5	8
10	10	91

*The thickness of the line indicates the frequency of transfers out of or within the public health preparedness district The circles represent transfers from a specific PHPD, not of a specific hospital or county.

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For Transfer Patients:

	All Transfer Patients	Critical*	Physiological Critical**	ISS Critical***
Number of Patients	734	253	200	76
Total Time	5 hours 4.3 minutes	4 hours 43.9 minutes	4 hours 57.5 minutes	4 hours 11.1 minutes
Total Mileage	49.4	53.7	54.4	54.1
Injury Scene to Initial Hospital Mileage*	7.8	7.1	7.1	7.1
Initial Facility to Final Facility Mileage	41.6	46.6	47.3	47

Estimated Average Distance (miles) by Region (region of final hospital):

Region	Injury Scene to Initial Facility Mileage†	Initial Facility to Final Facility Mileage	Total Mileage	Drive Count	Air Count
Indiana Average	7.8	41.6	49.4	633	101
North Region	6.9	29.1	36.0	192	8
Central Region	7.6	49.5	57.1	358	74
South Region	10.8	32.4	43.2	81	19

*Critical patient is defined as having a GCS ≤ 12, OR Shock Index > 0.9 OR ISS >15 at the initial hospital.

**Physiological Critical Transfer patient is defined as having a Shock Index > 0.9 OR GCS ≤ 12 at the initial hospital.

*** ISS Critical Transfer patient is defined as ISS > 15 at the initial hospital.

†Injury Scene to Initial Facility Mileage location estimated by zip code centroid

Statistics for Estimated Average Distance by Region calculated by Public Health Geographics, Epidemiology Resource Center, ISDH

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Patient Age Groupings
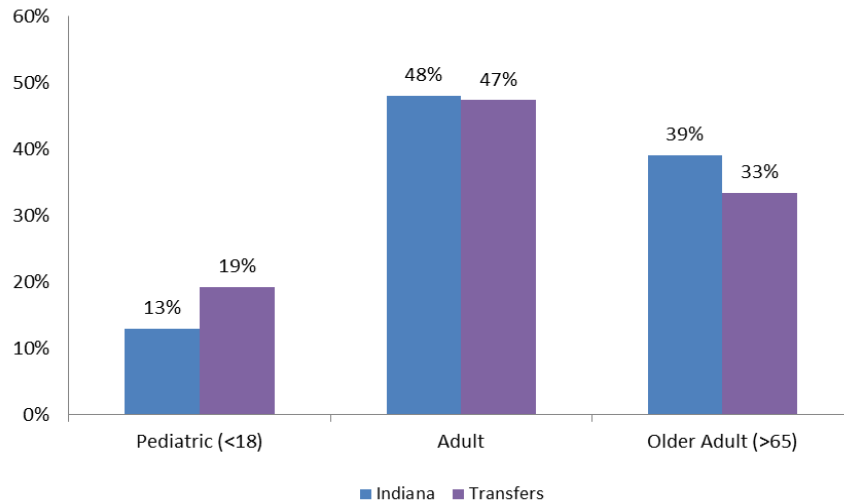
Pediatric (<18): Indiana 13%, Transfers 19%
Adult: Indiana 48%, Transfers 47%
Older Adult (>65): Indiana 39%, Transfers 33%
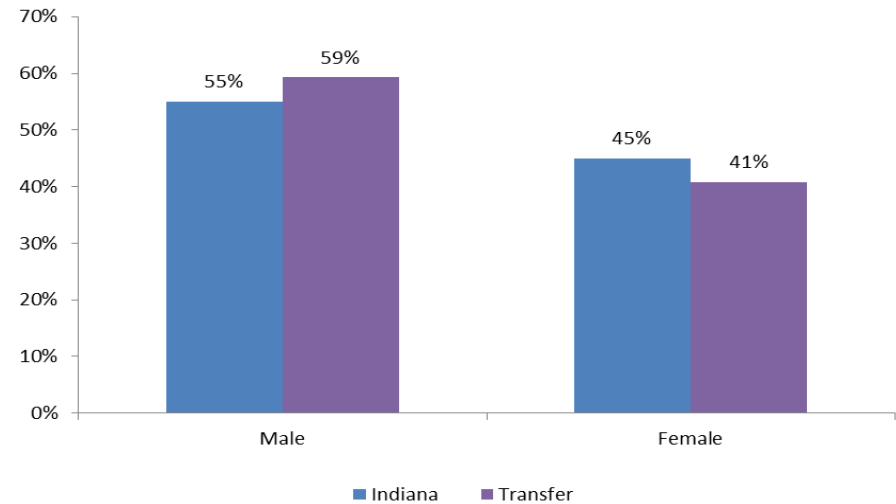
Legend: Indiana, Transfers

Patient Gender

Male: Indiana 55%, Transfer 59%
Female: Indiana 45%, Transfer 41%

Legend: Indiana, Transfer

Injury Severity Score (ISS)

1-8: Initial Hospital 49%, Final Hospital 44%
9-14: Initial Hospital 35%, Final Hospital 41%
15-24: Initial Hospital 7%, Final Hospital 11%
25-44: Initial Hospital 3%, Final Hospital 4%
45-74: Initial Hospital 0%, Final Hospital 0%
75: Initial Hospital 0%, Final Hospital 0%
No ISS: Initial Hospital 6%, Final Hospital 0%

Legend: Initial Hospital, Final Hospital

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Transport Mode– Final Hospital
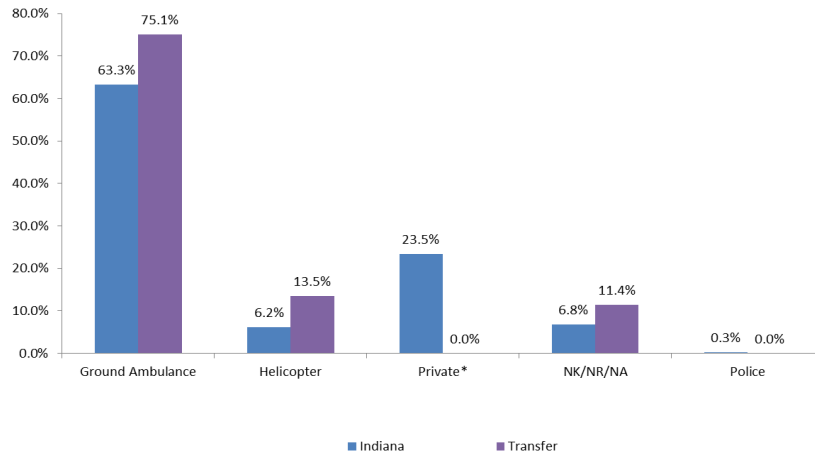
<1% Transport Mode: Police, Other   * Indicates Private/ Public Vehicle, Walk-in

ED Disposition by Percentage- Final Hospital

<1% : Transferred, Expired, AMA, Other

ED Length of Stay (hours)- Final Hospital
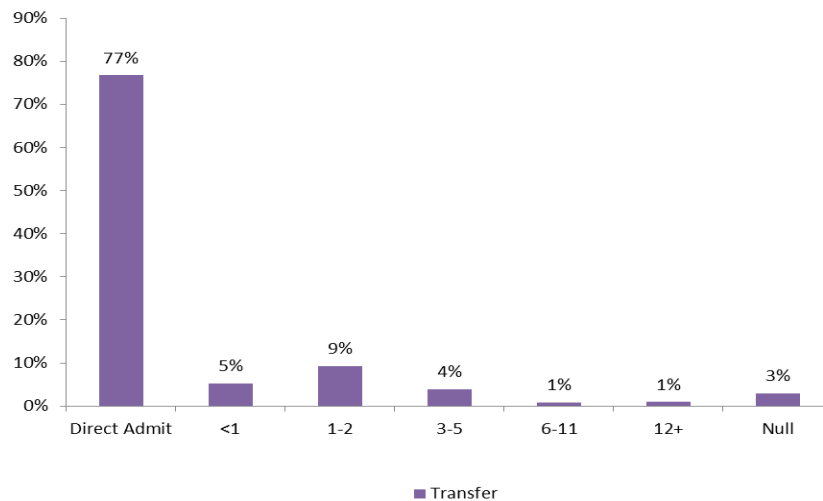
ICU Length of Stay (days)- Final Hospital
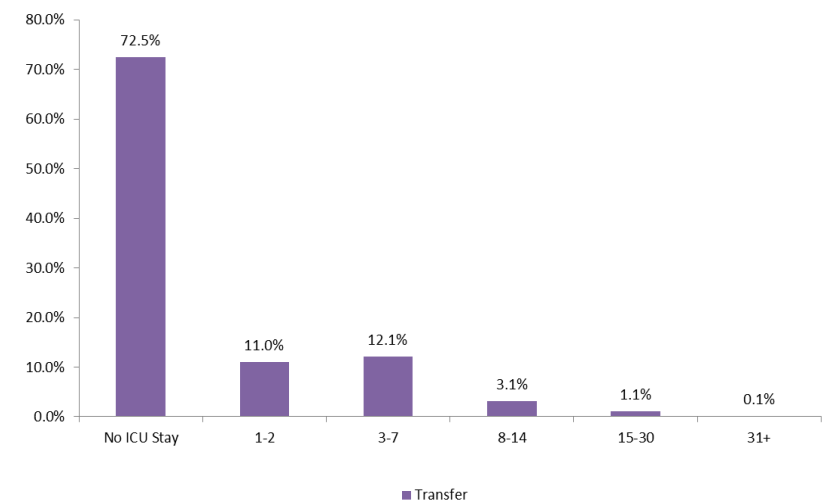
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Discharge Disposition– Final Hospital
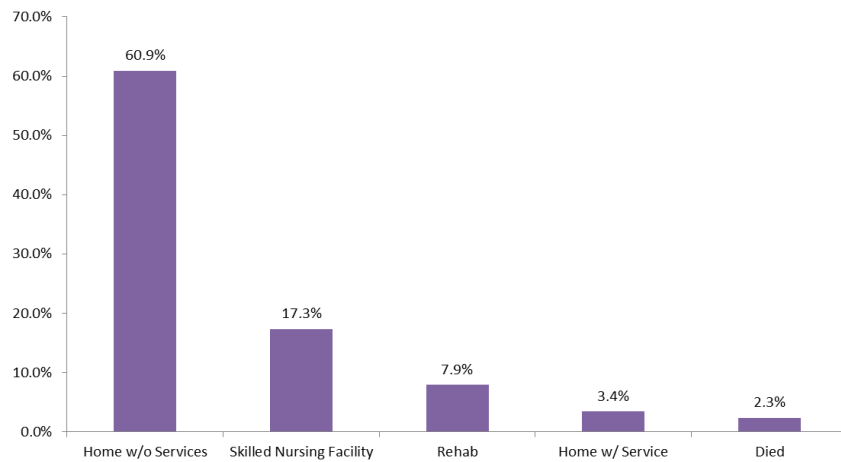
<1%: Acute care, AMA, another inst. Correctional, long-term care, hospice, psych hospital, no hospital stay

Helicopter Transfers by ISS– Final Hospital

Transfer Delay Indicated- Initial Hospital
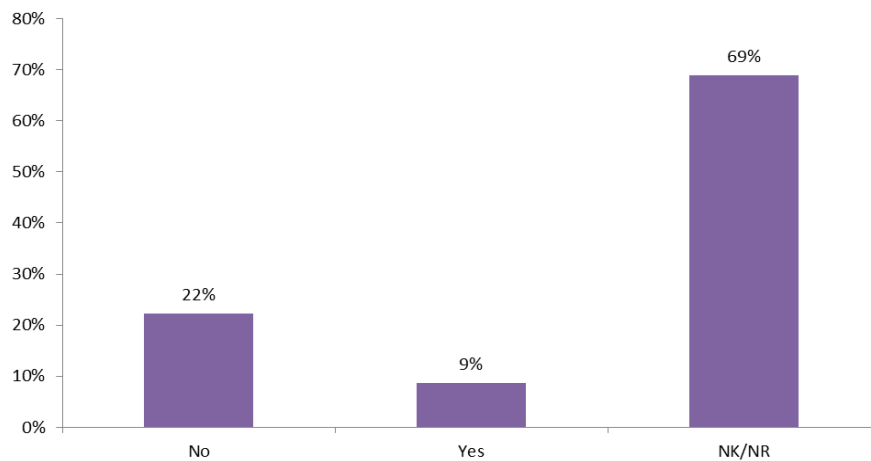
Initial Facility Transfer Delay Reason
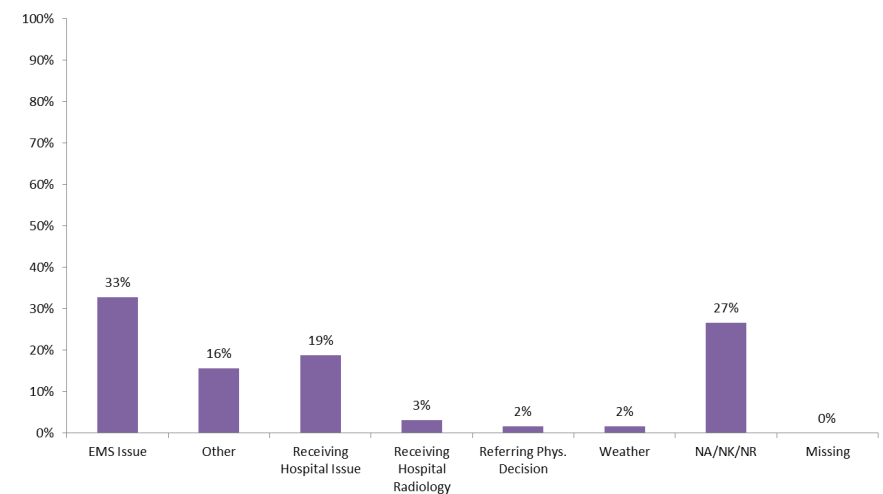
15

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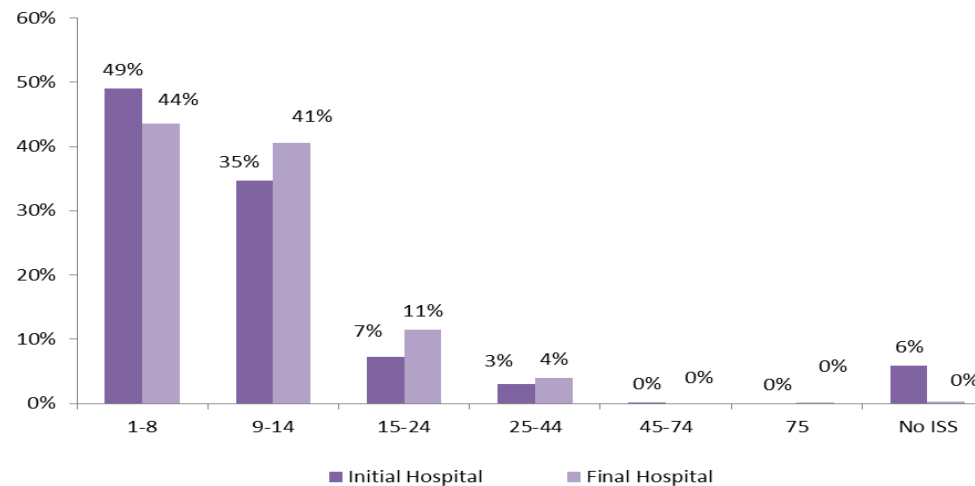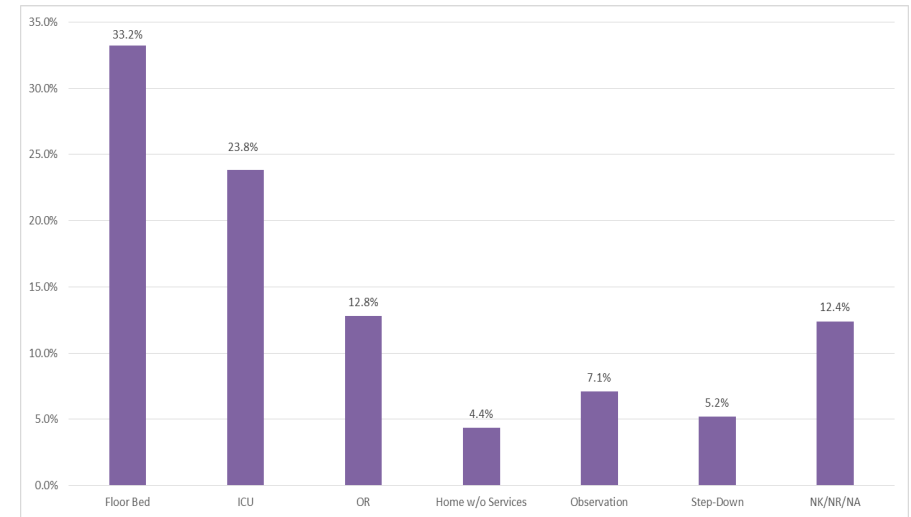|		
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Indiana State Department of Health
Indiana Trauma Registry

Hospitals Not Reporting Trauma Data to the Indiana Trauma Registry

Not reporting
7/01/2016 to 9/30/2016

Indiana State
Department of Health

Map Author: ISDH Trauma & Injury Prevention, ISDH PHG - April, 2017
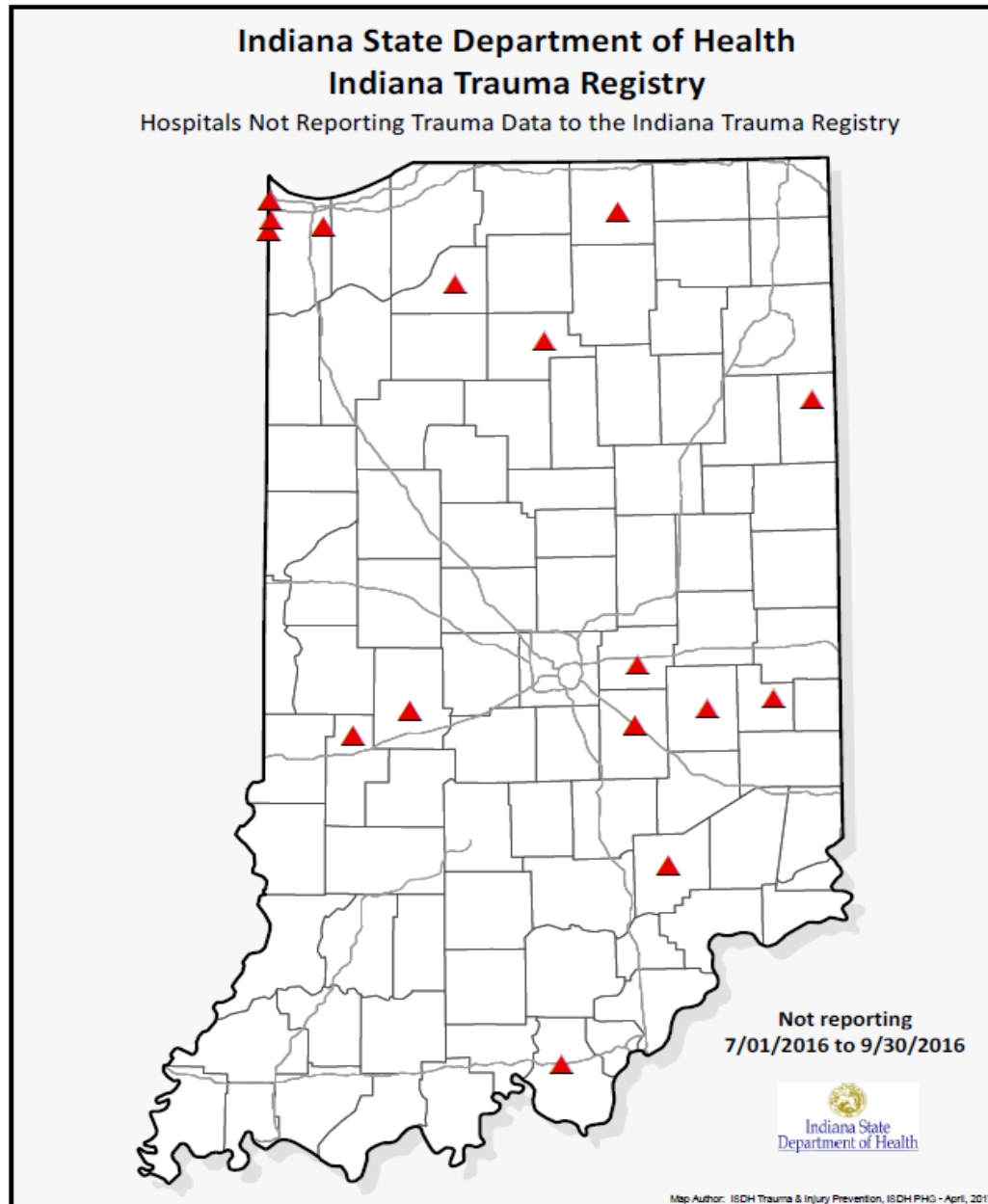
Hospital that did not report during Q3 2016:

-Adams Memorial Hospital
-Fayette Regional Health
-Franciscan Health—Dyer
-Franciscan Health—Hammond
-Franciscan Health—Munster
-Hancock Regional
-Harrison County
-IU Health—Goshen
-IU Health—Starke
-Major Hospital
-Rush Memorial Hospital
-St Mary Medical Center—Hobart
-St Vincent—Clay
-St Vincent—Jennings
-Woodlawn Hospital

Indiana State Department of Health
Indiana Trauma Registry

Hospitals Reporting Trauma Data Quarter 3
July 1, 2016 - September 30, 2016

I II Level I and II Trauma Centers

Deaconess Hospital
Eskenazi Health
IU Health - Methodist Hospital
Lutheran Hospital of Indiana
Memorial Hospital of South Bend
Parkview Regional Medical Center
Riley Hospital for Children at IU Health
St Mary's Medical Center of Evansville
St Vincent Indianapolis Hospital & Health Services
Terre Haute Regional Hospital

III Level III Trauma Centers

Community Hospital of Anderson & Madison Co.
Franciscan St Anthony Health - Crown Point
Franciscan St Elizabeth Health - Lafayette East
Good Samaritan Hospital
IU Health - Arnett Hospital
IU Health - Ball Memorial Hospital
Methodist Hospitals - Northlake Campus
Reid Hospital & Health Care Services
St Vincent Anderson
Union Hospital Terre Haute

▲ Non-Trauma Hospitals

80 Non-Trauma Hospitals

Hospital categories include Verified and "In the Process"
Trauma Centers as of June 30, 2016.
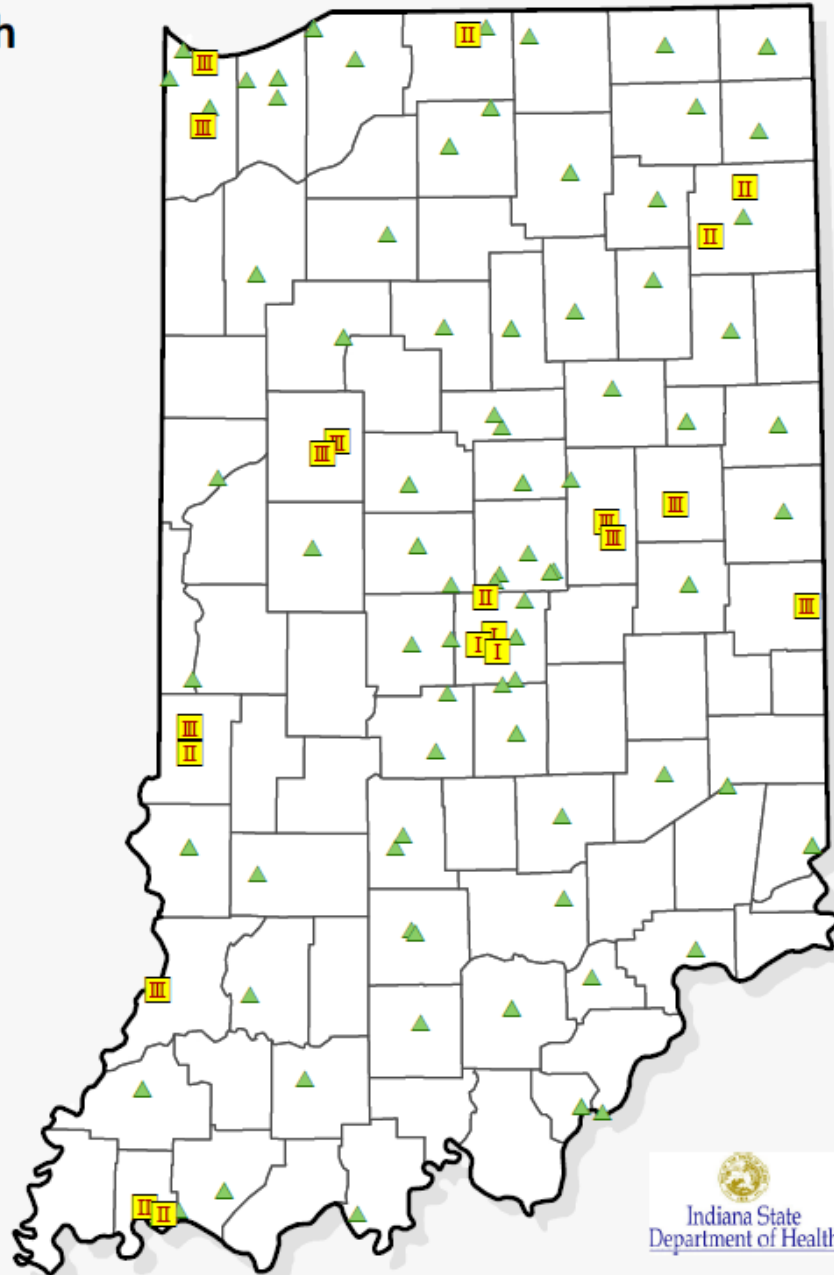
Map Author: ISDH Trauma & Injury Prevention, ISDH PHG - April, 2017

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Department of Health

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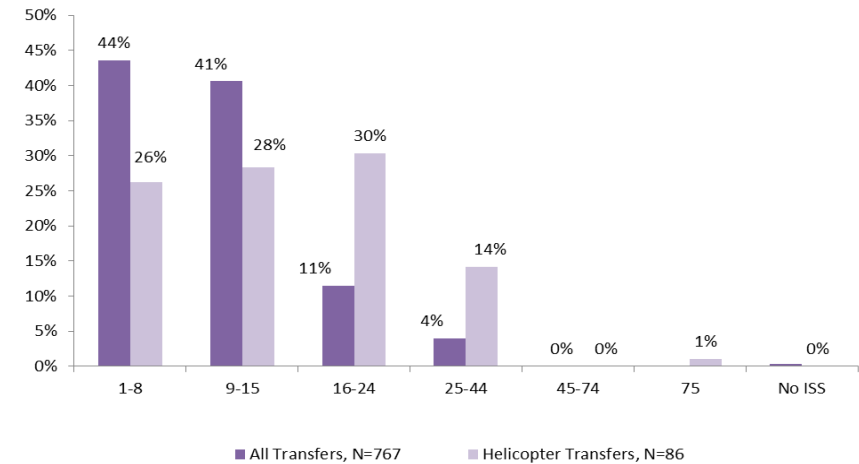|		
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Level III:	10 facilities	14.7% of data
(Non-Trauma) Hospitals:	80 facilities	36.7% of data

Requests and Changes to the Report from Trauma Care Committee members at the February 2017 ISTCC meeting:

General Report:

-ED LOS is calculated using ED Acute Care Admission Date/Time and ED Acute Care Discharge Date/Time (Orders Written)

-Hospital LOS is calculated using Hospital Admission Date/Time and Hospital Discharge Date/Time (Orders Written)

-Trauma type and probability of survival will not be included in the statewide report until the CDC finalizes their guidelines on how to categorize those variables.

-Pages 44-49 have caterpillar plots with the ED LOS for critical transfer patients.

-Signs of Life: The two field values for this variable are: 1) Arrived with no signs of life, 2) Arrived with signs of life. A patient with no signs of life is defined as having none of the following: organized EKG activity, pupillary responses, spontaneous respiratory attempts or movement, and unassisted blood pressure. This usually implies the patient was brought to the ED with CPR in progress.

Example Bar and Whisker Plot:

-Bar and whisker plots were requested at the November 2013 ISTCC meeting in order to show more than just an average ED LOS and ED LOS by ISS. The bar and whisker plots represent the four quartiles of data, as illustrated on the example graph to the right. The blue boxes each contain 25% of the values and the error bars each represent where 25% of the values fell. The median is represented in the middle of the two blue boxes with the white line. The red dot in the center indicates the average for that category. The cap on the error bars indicates the minimum and maximum of each category and all the values fall within the two caps.

-For the ED LOS bar and whisker plots to the right, the average is represented by the white dot and the color boxes reflect the hospital type. The ED LOS by ISS plots on the next page follow the same layout and the red dots indicate the average for each of the ISS categories.
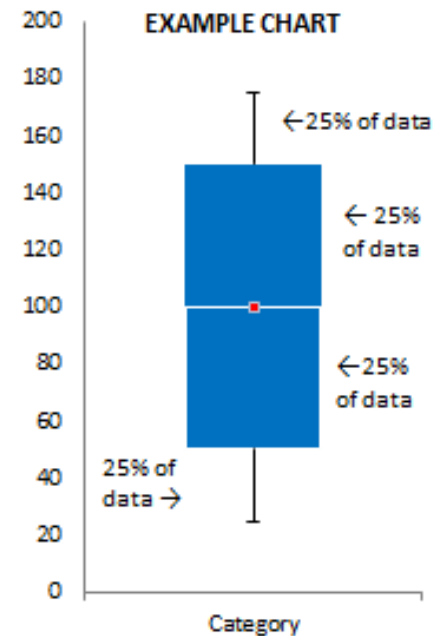
EXAMPLE CHART

Indiana Trauma Registry

Statewide Quarter 3 Data Report
July 1, 2016—September 30, 2016
10,494 Incidents

100 Total Hospitals Reporting

Level I and II:	10 facilities	48.6% of data
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(Non-Trauma) Hospitals:	80 facilities	36.7% of data

Supplemental Report

The Supplemental Report (pages 19-55) contains demographic information, data that stays nearly constant from quarter to quarter, and reference tables and maps.

Definitions:

Emergency Department Length of Stay (ED LOS): The time from ED Admission to ED Discharge (Physical Exit). This changed to time from ED Admission to ED Discharge (Orders Written) beginning with Quarter 3 2016 data (July 1, 2016—September 30, 2016). There is a 120 minute performance improvement filter that is tracked for various hospital groups.

Direct Admit: Patient is admitted directly to the hospital and does not spend time in Emergency Department. The ED Length of Stay should reflect a direct admittance.

External Cause of Injury: ICD-10-CM codes that are used to describe the mechanism or external factor that caused the injury event.

Trauma Type: The classification of the force applied to the body. Trauma type categories include blunt, penetrating, thermal, and other trauma.

Injury Severity Score: An anatomical scoring system defined as the sum of the three highest squared maximum Abbreviated Injury Scale (AIS) values to account for multiple injuries in the six body regions.

Signs of Life: The two field values for this variable are: 1) Arrived with no signs of life, 2) Arrived with signs of life. A patient with no signs of life is defined as having none of the following: organized EKG activity, pupillary responses, spontaneous respiratory attempts or movement, and unassisted blood pressure. This usually implies the patient was brought to the ED with CPR in progress.

Acronyms:

E-code: External Cause of Injury	MVC: Motor Vehicle Collision
ED: Emergency Department	OR: Operating Room
ICU: Intensive Care Unit	Ps: Probability of Survival
ISS: Injury Severity Score	CAHs: Critical Access Hospital
LOS: Length of Stay	

Calculations:

$Ps = 1/(1+e^{-b})$ where $b=b_o+b1(RTS) + b2(ISS) + b3(Age Index)$

Total GCS = Verbal GCS + Motor GCS + Eye GCS

RTS = 0.94*GCS+0.73*SBP+0.29*RR

$ISS = (AIS)^2 + (AIS)^2 + (AIS)^2$

Indiana State
Department of Health
Trauma and Injury Prevention

Indiana Trauma Registry

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ED LOS ≥ 12 Hours

N=45

ED Length of Stay ≥ 12 Hours			
Hour	Count	**Hour**	Count
12th	3	**26th**	0
13th	5	**27th**	1
14th	4	**28th**	0
15th	5	**29th**	1
16th	2	**30th**	1
17th	2	**31st**	0
18th	4	**32nd**	0
19th	1	**33rd**	0
20th	1	**34th**	0
21st	1	**35th**	0
22nd	0	**36th**	0
23rd	3	**37th**	0
24th	9	**38th**	0
25th	1	**39th**	1

Indiana Trauma Registry

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Average ED LOS (Minutes)

*Black line represents the 120 minute performance improvement filter

**Blue line represents the state average

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ED Disposition by ISS 1-15

ED Disposition by ISS 16-75

ED Disposition <1%: Expired, AMA; Home with services; Other (Jail, Mental Institution, etc.). Please note the difference in axis scale between the top and bottom graphs.

Indiana Trauma Registry

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Primary Payer Mix
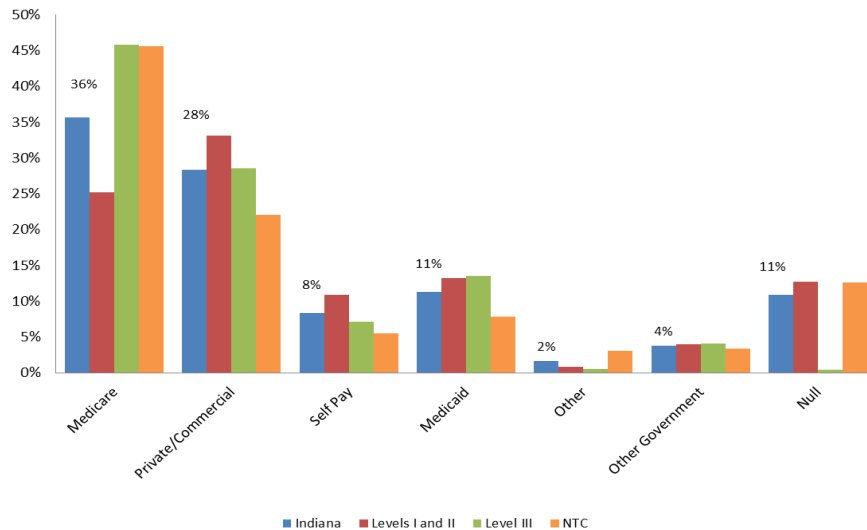
ICU Length of Stay (Days)
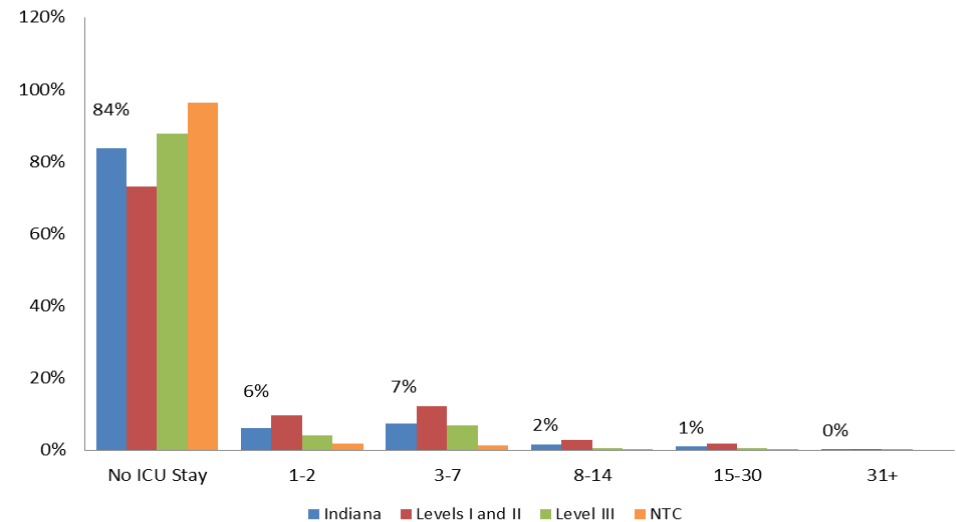
Indiana Trauma Registry

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Hospital Length of Stay > 15 days, N=407

Primary Payer Mix
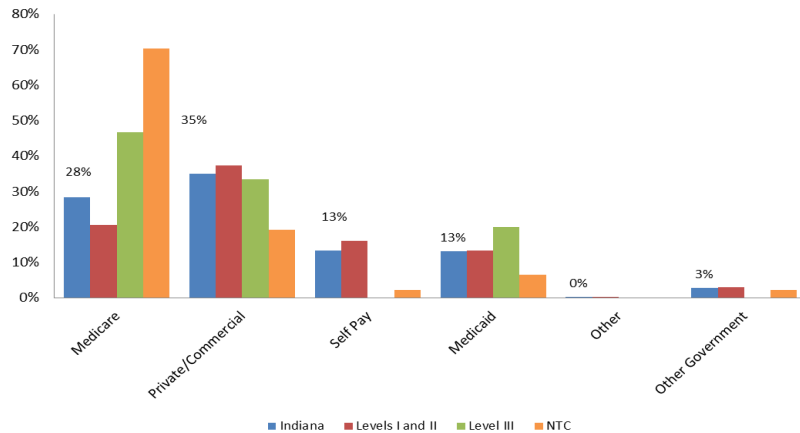
Hospital Disposition
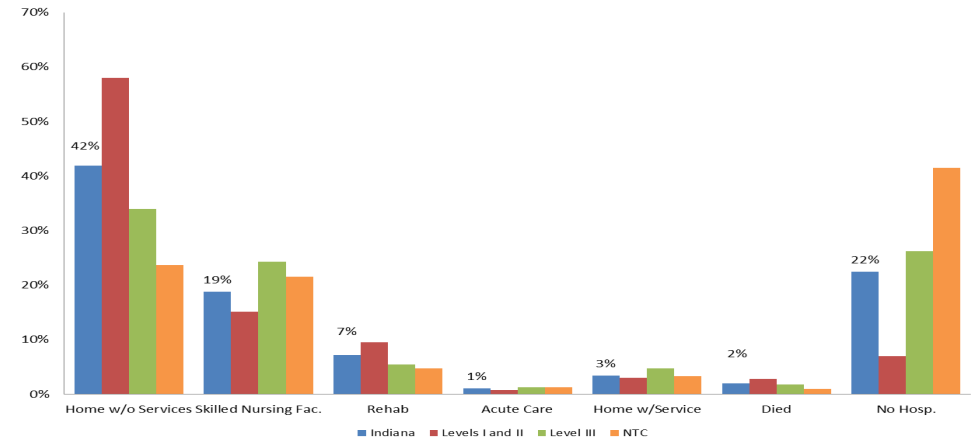
Another Institution includes any other medical facility not defined in the other categories.

Cause of Injury
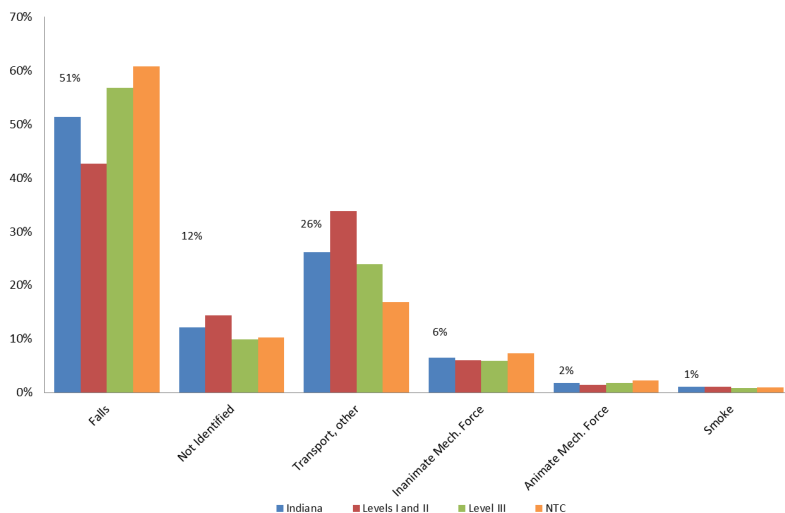
Cause of Injury is based on ICD-10-CM codes as of January 1, 2016. The categories for this variable include:

- Transport
- Falls
- Inanimate Mechanical Forces
- Animate Mechanical Forces
- Drowning
- Breathing
- Electricity/Radiation
- Smoke
- Heat
- Venom
- Forces of Nature

- Overexertion and Travel
- Unspecified
- Poisoning
- Not Identified

Indiana Trauma Registry

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Patient Age (Years)
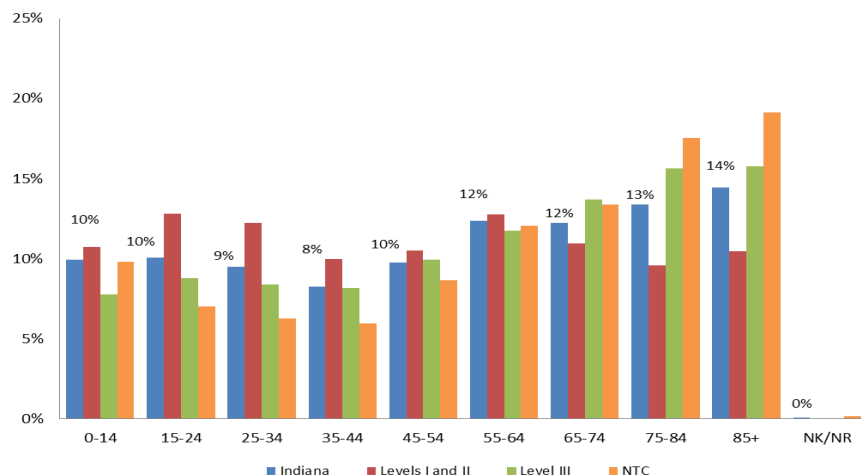
There were 7 unknown ages.
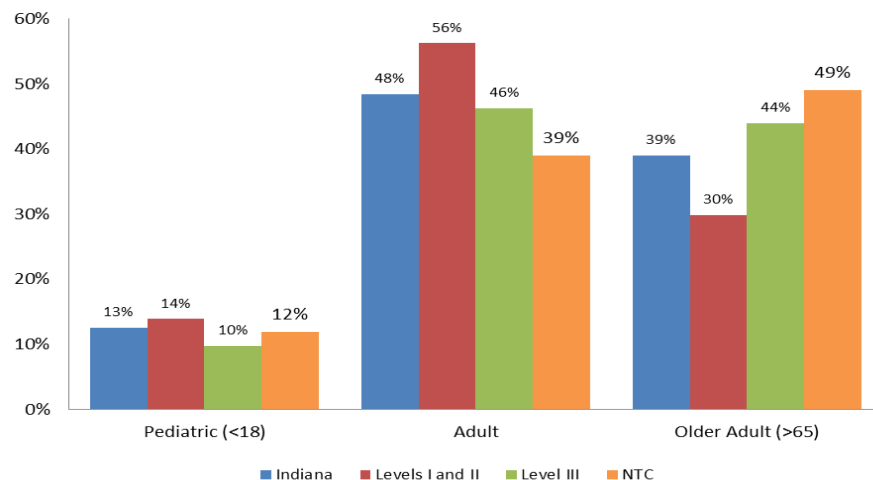
Age Group	Indiana	Level I and II	Level III	NTC
0-14	1045	548	120	377
15-24	1059	653	136	270
25-34	995	624	130	241
35-44	865	509	126	230
45-54	1023	536	154	333
55-64	1295	650	182	464
65-74	1285	558	212	515
75-84	1405	488	242	675
85+	1514	533	244	737
NK/NR	7	0	0	7
Total	10494	5099	1546	3849

Patient Age Groupings

Age Group	Indiana	Level I and II	Level III	NTC
Pediatric (<18)	1316	708	151	457
Adult	5082	2868	715	1499
Older Adult (>65)	4089	1523	680	1886
Total	10487	5099	1546	3842

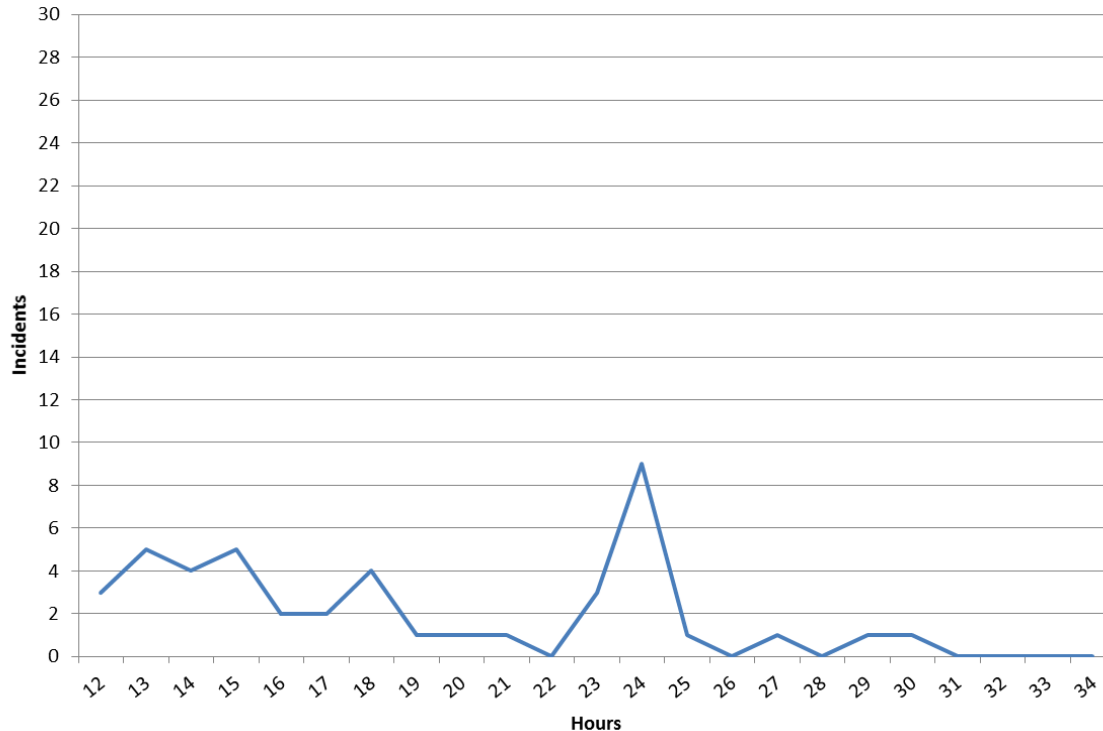# Indiana Trauma Registry

Statewide Quarter 3 Data Report
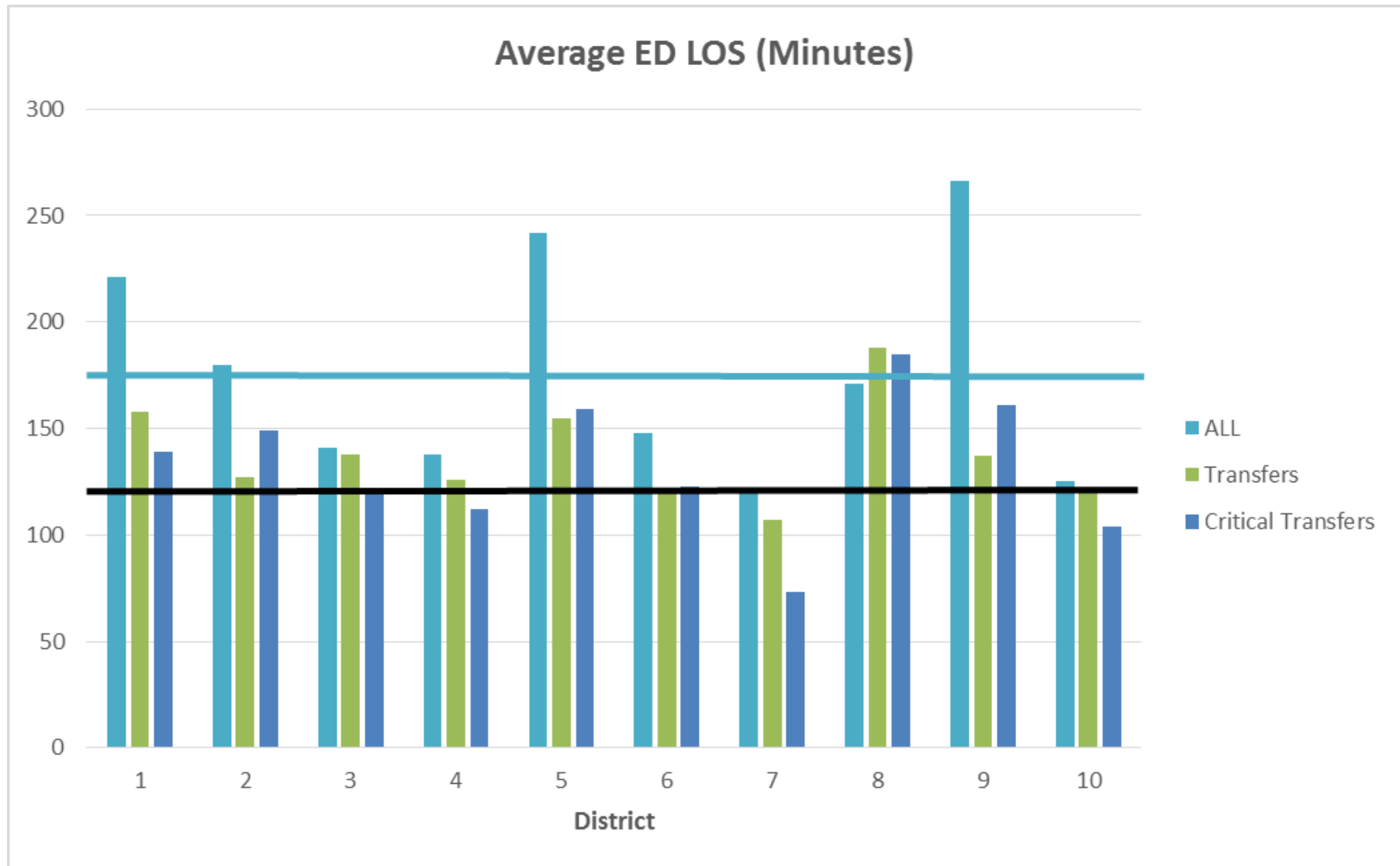July 1, 2016—September 30, 2016
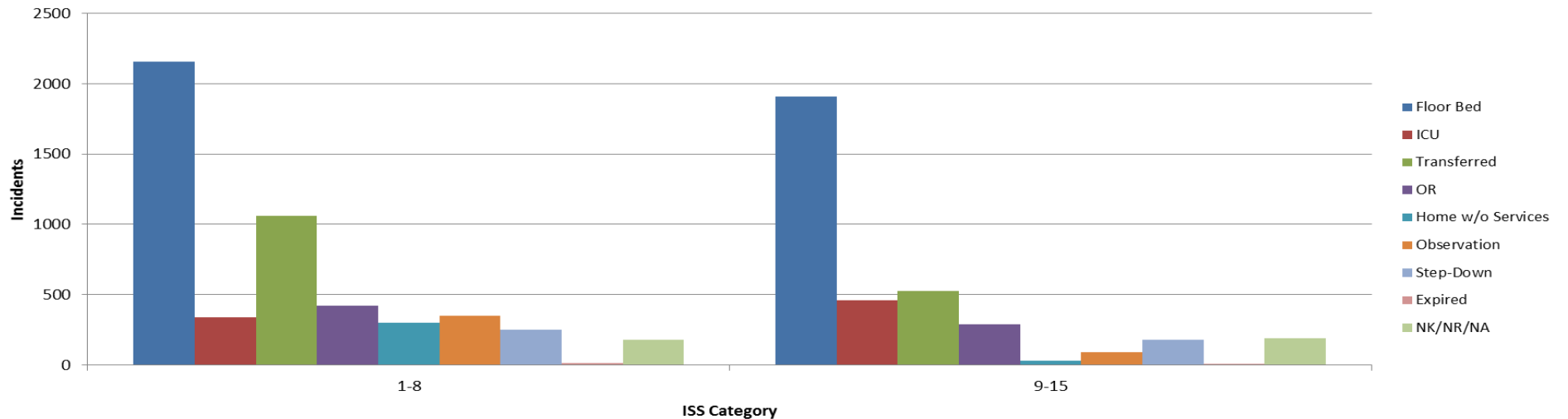**10,494 Incidents**

100 Total Hospitals Reporting
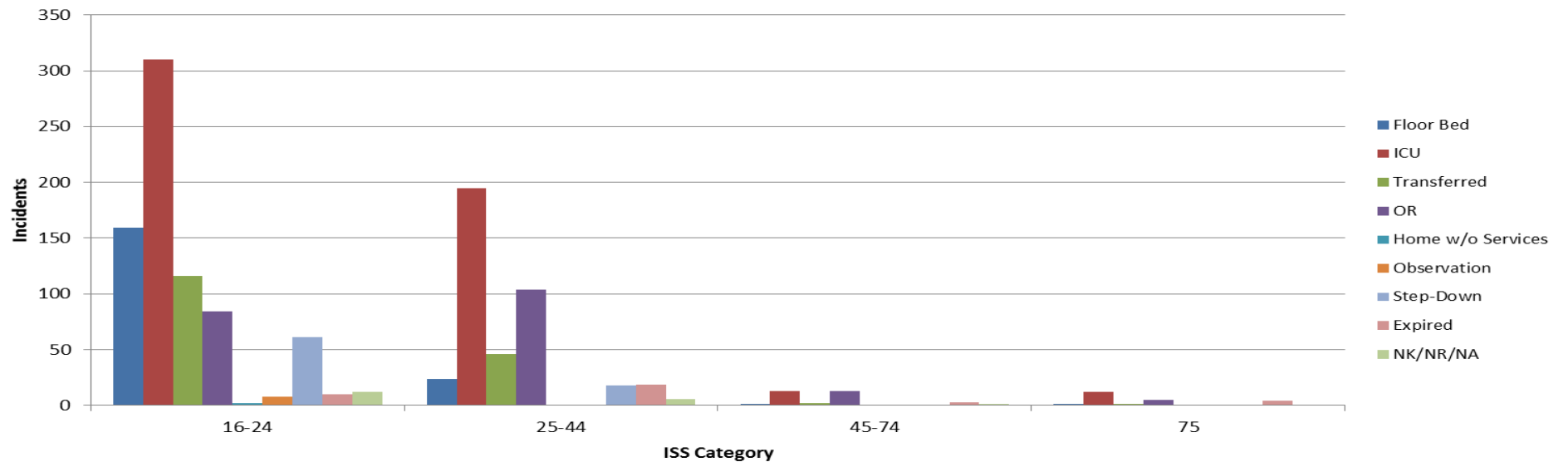
Level I and II:	10 facilities	48.6% of data
Level III:	10 facilities	14.7% of data
(Non-Trauma) Hospitals:	80 facilities	36.7% of data

Patient Gender
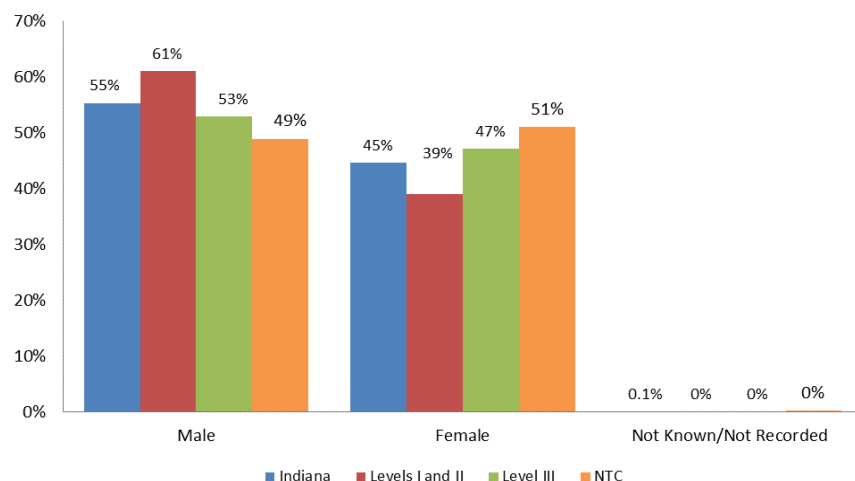
Gender	Indiana	Level I and II	Level III	NTC
Male	5806	3109	817	1880
Female	4681	1990	729	1962
Unknown	7	0	0	7
Total	10494	5099	1546	3849

Patient Race
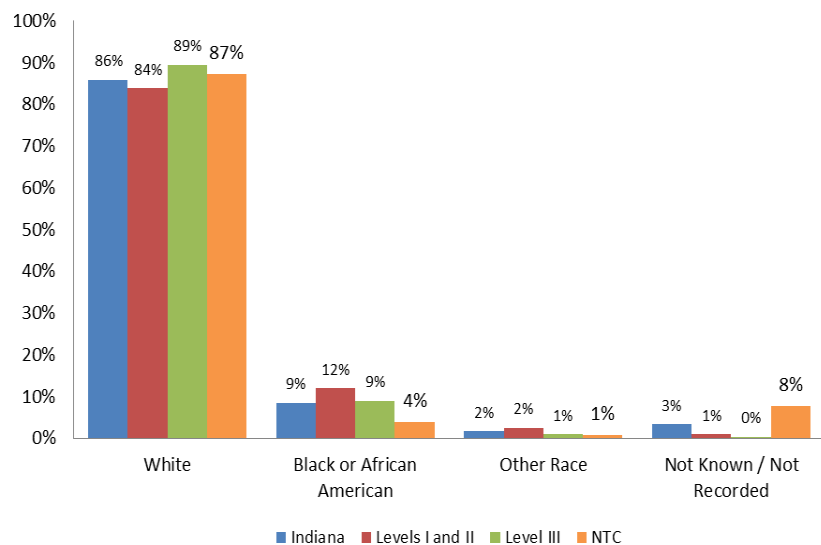
Race	Indiana	Level I and II	Level III	NTC
White	9014	4272	1382	3360
Black or African American	893	608	138	147
Other	173	126	14	33
Not Known/Not Recorded	350	49	5	296
American Indian or Alaska Native	8	6	0	2
Asian	50	33	7	10
Native Hawaiian or Pacific Islander	6	5	0	1
Total	10494	5099	1546	3849

<1% Race - Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native

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Indiana Trauma Registry

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10,494 Incidents

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Injury Severity Score (ISS)

There were 33 and 23 cases in the 45-74 and 75+ categories, respectively
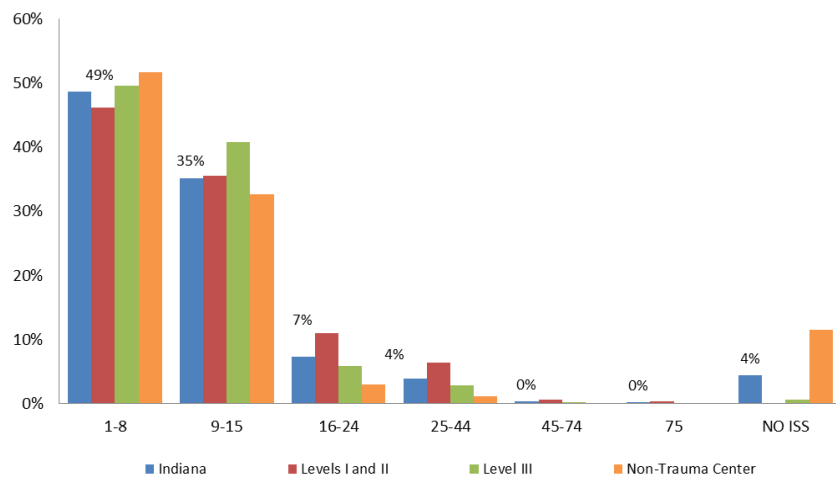
ISS Category	Indiana	Level I and II	Level III	NTC
1-8	5108	2354	766	1988
9-15	3696	1810	631	1255
16-24	763	558	90	115
25-44	414	324	44	46
45-74	33	29	3	1
75	23	21	2	0
No ISS	457	3	10	444
Total	10494	5099	1546	3849
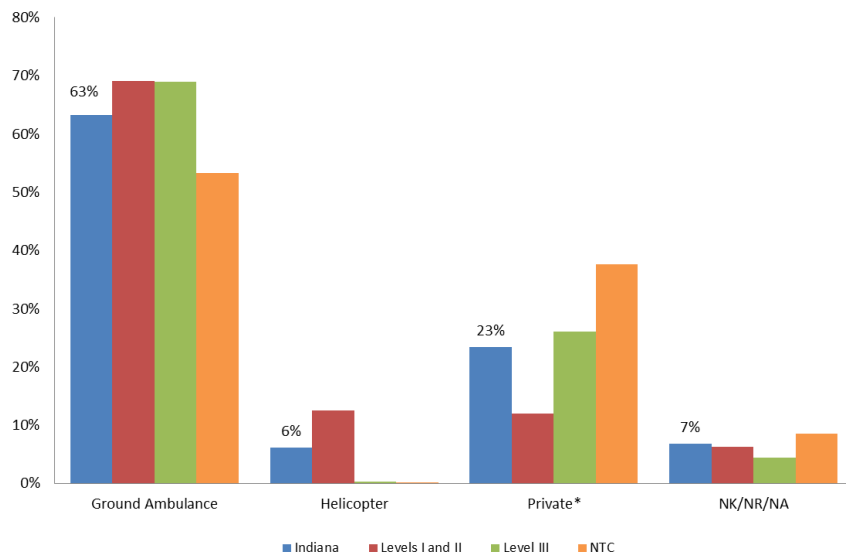
Transport Mode

Transport Mode	Indiana	Level I and II	Level III	NTC
Ground Ambulance	6642	3523	1067	2052
Helicopter	646	638	5	3
Private	2461	612	403	1446
NK/NR/NA	715	319	68	328
Police	27	4	3	20
Other	3	3	0	0
Total	10494	5099	1546	3849

<1% Transport Mode: Police, Other   * Indicates Private/ Public Vehicle, Walk-in

Indiana Trauma Registry

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Cause of Injury
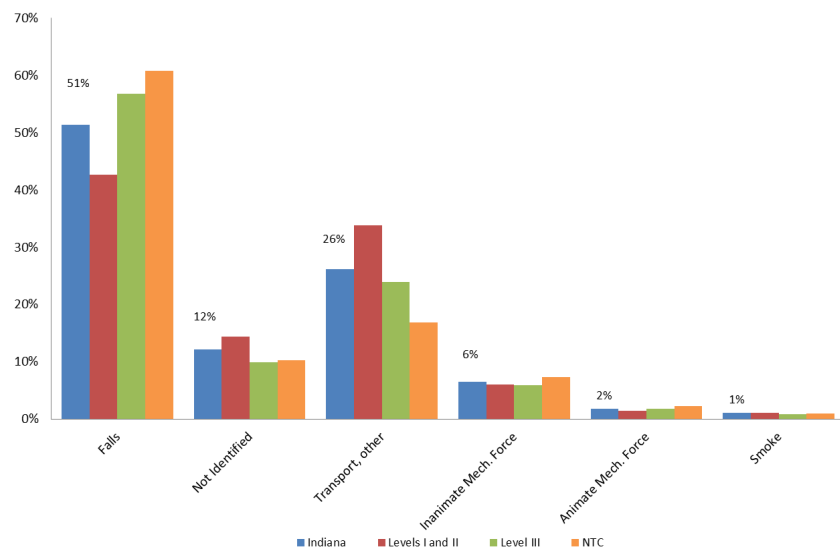
<1% Cause of Injury Categories: Unspecified, Electricity/Radiation, Forces of Nature, Drowning, Breathing, Venom, Noxious Substances, and Poisoning.

Cause of Injury	Indiana	Level I and II	Level III	NTC
Falls	5389	2174	877	2338
Not Identified	1280	731	153	396
Transport	2742	1726	369	647
Inanimate Mech. Force	678	306	92	280
Animate Mech. Force	187	74	28	85
Smoke	107	57	13	37
Heat	44	14	5	25
Unspecified	52	11	5	36
Electric/ Radiation	8	4	4	0
Nature	2	1	0	1
Drowning	4	1	0	3
Overexertion	1	0	0	1
Total	10494	5099	1546	3849

Indiana Trauma Registry

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### 10,494 Incidents

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All Patients
Average ED LOS (Hours)

	Indiana	Level I and II	Level III	Non-Trauma Centers
Upper CL	3.3	3.5	2.2	3.6
▲ Mean	3.2	3.1	2.1	3.4
Lower CL	3.1	2.8	2.0	3.3
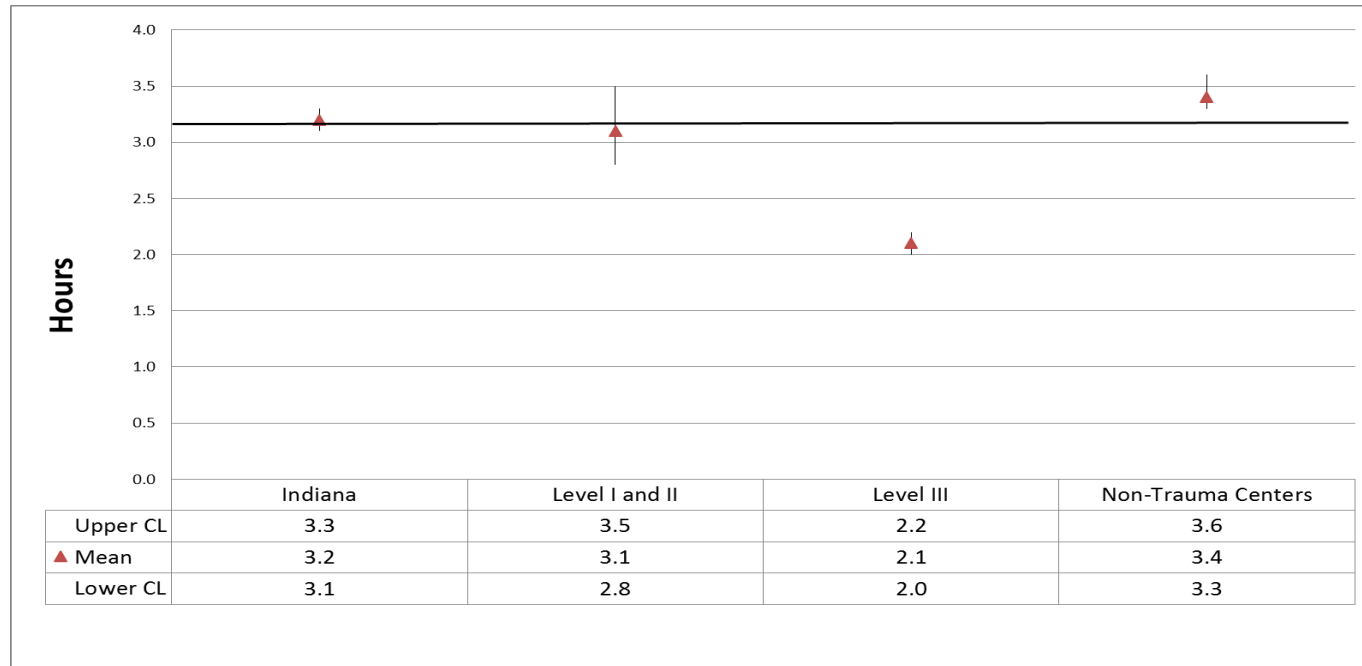
The purpose of the caterpillar graphs is to compare different groups to the average ED LOS. The Indiana mean is the comparison group, which is represented by the black line.

The ED LOS for these graphs was modeled using time-to-event analysis. The purposes of using this analysis were to account for censoring (death) and to see how variables influence ED LOS. The outcome variable was ED LOS and the independent variables were total GCS and age. If total GCS was missing but manual total GCS was recorded, then the manual total GCS was used. These two variables were used because they were the most similar to variables used in the published, peer-reviewed literature on ED LOS. Both were significant in the model. Increasing total GCS and age led to a slightly shorter ED LOS. Hospitals that did not have enough incidents with total GCS or age could not be modeled.

In the chart on the left, note the trauma center average is above the mean and the non-trauma center is below the mean. The mean, 95% confidence limit and lower confidence limit are listed for each group.

In the chart on the right, the data is for the trauma centers. The trauma center average is in the first column on the left side. The information for each trauma center has been assigned a random number for confidentiality. The mean, 95% confidence limit and lower confidence limit are listed for each group.

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Indiana Trauma Registry

Statewide Quarter 3 Data Report
July 1, 2016—September 30, 2016
**10,494 Incidents**

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All Patients
Level I and II Trauma Centers ED LOS (Hours)

	Levels I and II	ID 65	ID 93	ID 95	ID 100	ID 18	ID 33	ID 102	ID 3	ID 96
Upper CL	3.5	2.2	3.0	2.2	2.2	8.1	2.7	5.0	5.9	6.8
▲ Mean	3.1	1.0	1.1	1.8	2.0	2.3	2.3	4.4	4.5	5.2
Lower CL	2.8	0.0	0.0	1.3	1.7	0.0	1.9	3.8	3.1	3.6

Indiana Trauma Registry

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All Patients
Level III Trauma Centers ED LOS (Hours)

	Level III	ID 24	ID 68	ID 74	ID 17	ID 19	ID 58	ID 54	ID 49	ID 109	ID 37
Upper CL	2.2	2.0	2.2	2.1	2.3	2.6	2.6	2.4	2.4	2.4	4.4
▲ Mean	2.1	1.7	1.8	1.8	1.9	2.0	2.1	2.1	2.1	2.1	3.5
Lower CL	2.0	1.4	1.4	1.5	1.4	1.4	1.6	1.7	1.9	1.9	2.7

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All Patients
Non-trauma Centers ED LOS (Hours)

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All Patients
Non-Trauma Centers-
Average ED LOS (Hours)

	NTC	ID 122	ID 32	ID 117	ID 70	ID 83	ID 107	ID 111	ID 119	ID 124	ID 47	ID 42	ID 114	ID 5	ID 113	ID 77	ID 125
Upper CL	3.6	3.6	2.2	1.9	2.1	2.3	2.6	2.2	2.2	2.1	2.3	2.4	2.4	2.5	2.8	3	2.2
▲ Mean	3.4	0.9	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.9	2	2	2.1	2.1	2.2	2.2
Lower CL	3.3	0	1.1	1.3	1.3	1.2	0.9	1.3	1.3	1.3	1.6	1.5	1.6	1.6	1.5	1.4	2.2

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All Patients
Non-Trauma Centers-
Average ED LOS (Hours)

	NTC	ID 31	ID 55	ID 59	ID 86	ID 23	ID 62	ID 116	ID 10	ID 12	ID 52	ID 115	ID 72	ID 97	ID 51	ID 81	ID 11	ID 78
Upper CL	3.6	3.3	3.4	2.9	2.6	7.5	2.8	3.2	2.9	3.3	3	2.9	3.1	3.1	3.2	3.4	9.9	3.2
▲ Mean	3.4	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.6	2.6	2.7	2.7	2.8	2.8
Lower CL	3.3	1.3	1.3	1.7	1.9	0	2.1	1.6	2.2	1.7	2.1	2.1	2	2	2.1	2	0	2.4

Indiana Trauma Registry

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All Patients
Non-Trauma Centers-
Average ED LOS (Hours)

	NTC	ID 123	ID 46	ID 84	ID 98	ID 71	ID 1	ID 7	ID 69	ID 2	ID 27	ID 75	ID 99	ID 44	ID 104	ID 28	ID 34	ID 80
Upper CL	3.6	3.3	4.7	4	5.2	4	5.5	6.1	3.9	4.7	4.1	8.6	4	4.4	4.8	3.9	4.4	6.1
▲ Mean	3.4	2.8	2.9	2.9	2.9	3.1	3.2	3.2	3.3	3.4	3.4	3.4	3.4	3.6	3.7	3.9	3.9	3.9
Lower CL	3.3	2.3	1.1	1.8	0.6	2.2	1	0.3	2.7	2.1	2.6	0	2.7	2.9	2.6	3.9	3.4	1.7

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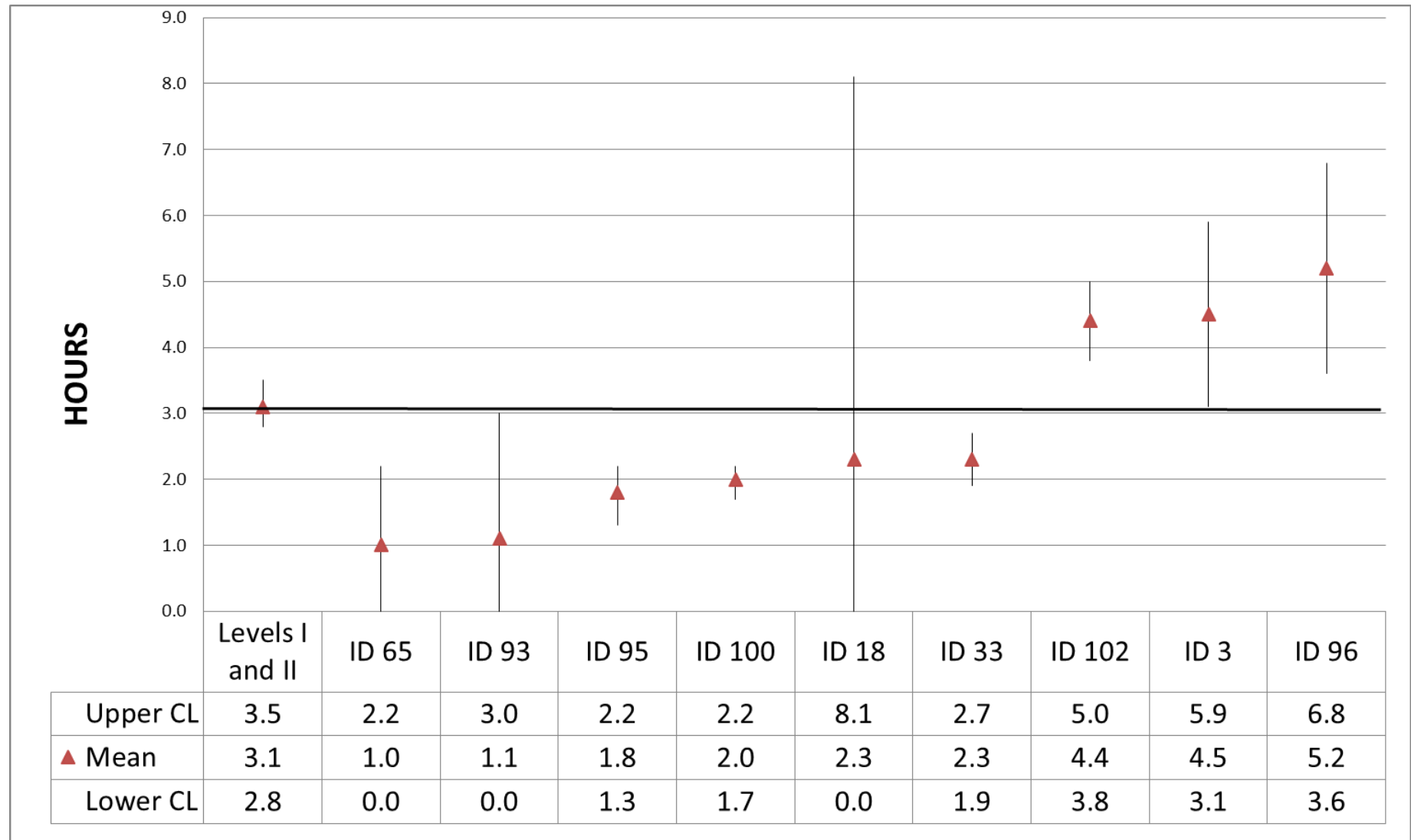
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All Patients
Non-Trauma Centers-
Average ED LOS (Hours)

	NTC	ID 88	ID 92	ID 61	ID 94	ID 112	ID 40	ID 15	ID 89	ID 108	ID 53	ID 29	ID 30	ID 63	ID 41	ID 85	ID 25
Upper CL	3.6	5.9	4.4	5.4	4.9	4.7	5.7	5.3	5.4	10.4	14.3	7.5	6.9	9.4	15.6	11.7	16.9
▲ Mean	3.4	4	4	4.1	4.1	4.2	4.7	4.8	4.9	4.9	5.2	5.3	5.4	5.4	5.5	5.8	10.8
Lower CL	3.3	2.2	3.6	2.8	3.2	3.7	3.7	4.4	4.4	0	0	3	3.9	1.4	0	0	4.8

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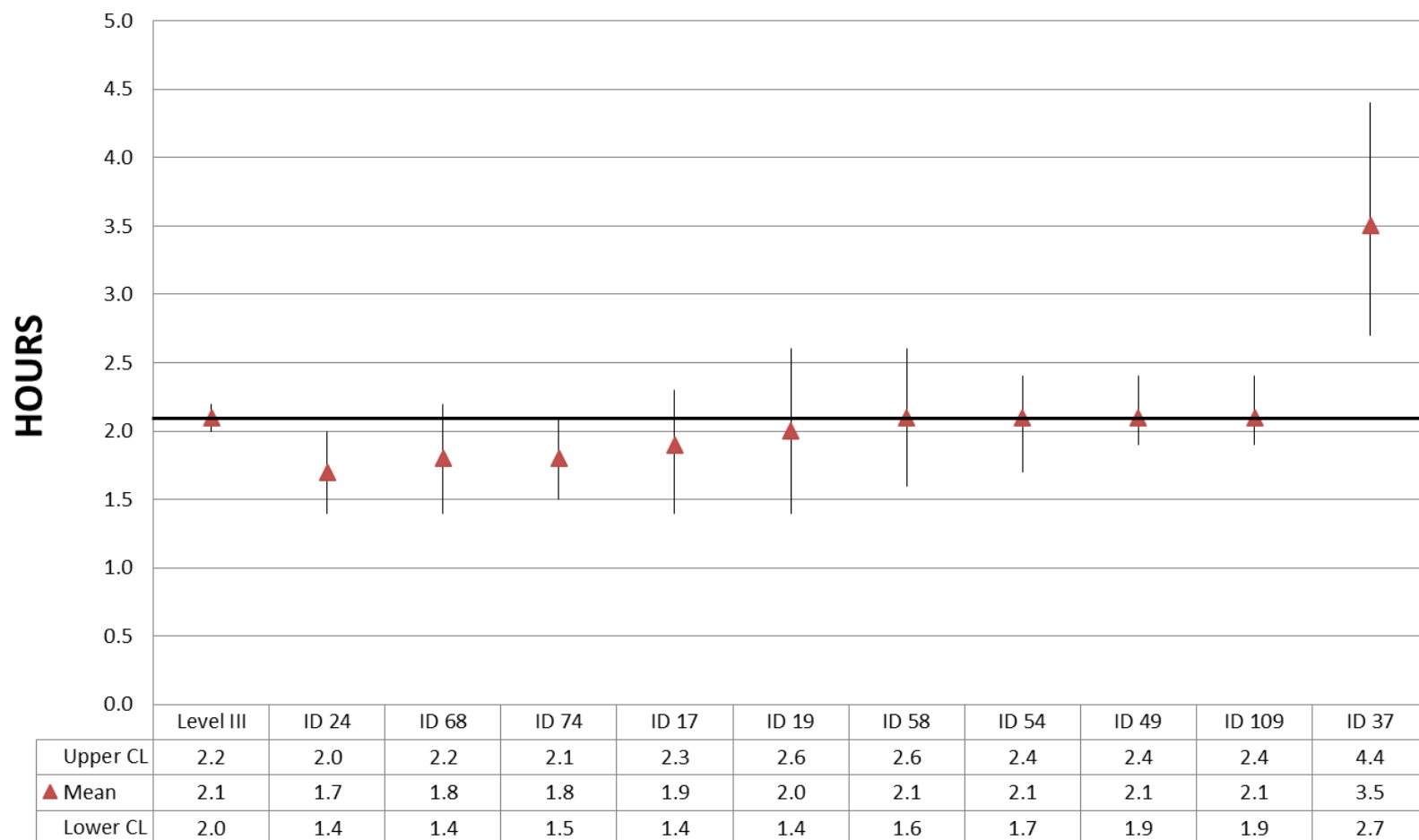**10,494 Incidents**

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ED Disposition = Transferred

Average ED LOS (Hours)

	Indiana	Levels I and II	Level III	Non-Trauma Centers
Upper CL	2.5	2.2	2.0	2.7
▲ Mean	2.3	2.0	1.9	2.5
Lower CL	2.2	1.7	1.7	2.3

Indiana Trauma Registry

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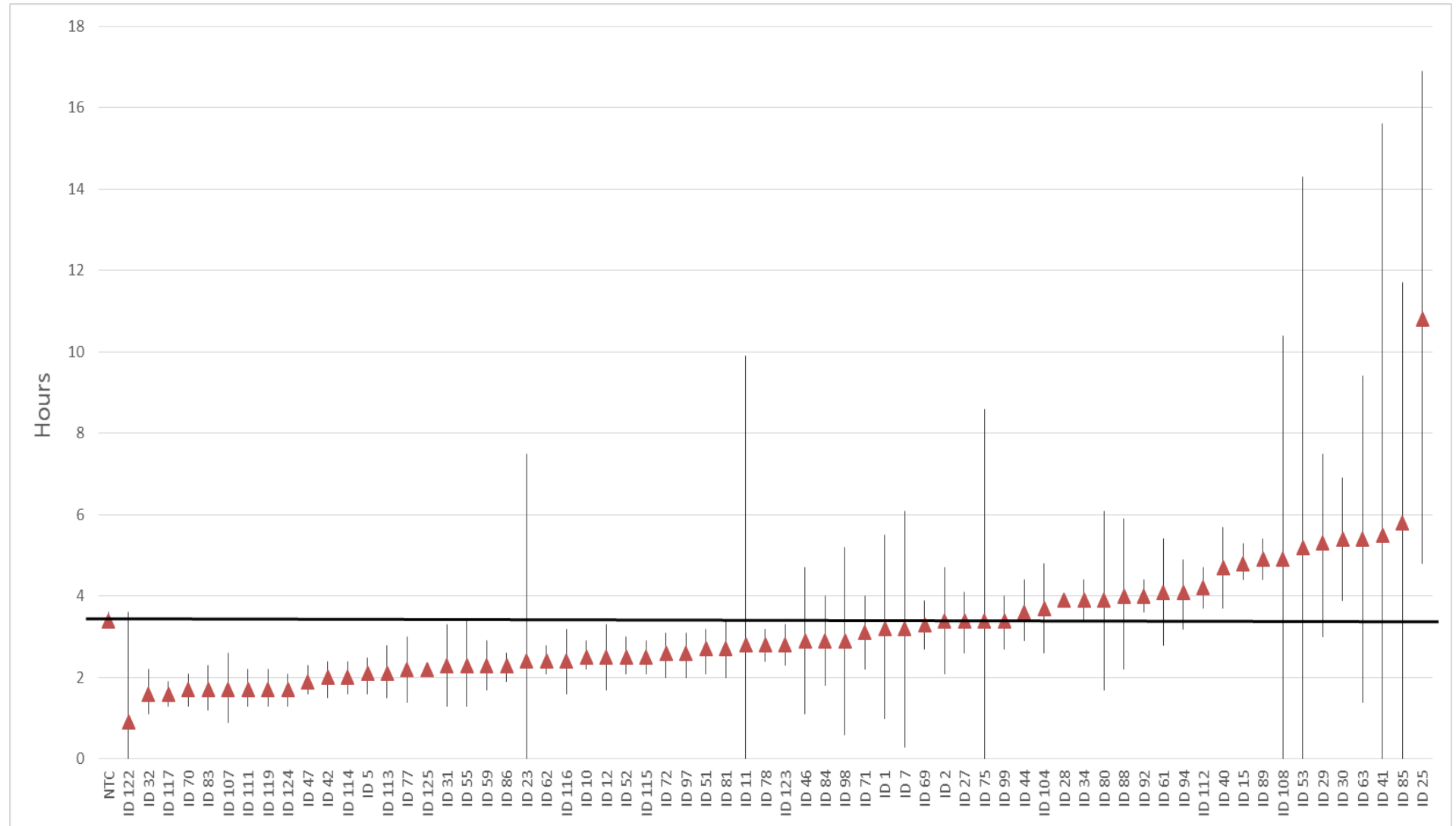**10,494 Incidents**

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ED Disposition = Transferred

Level I and II Trauma Centers- Average ED LOS (Hours)

	Levels I and II	ID 93	ID 3	ID 95	ID 33	ID 100	ID 18	ID 102
Upper CL	2.2	0.6	2.4	2.3	2.6	2.5	8.1	8.1
▲ Mean	2.0	0.2	1.4	1.6	1.9	2.2	2.3	3.5
Lower CL	1.7	0.0	0.4	0.8	1.3	1.8	0.0	0.0

Indiana Trauma Registry

Statewide Quarter 3 Data Report
July 1, 2016—September 30, 2016
10,494 Incidents

100 Total Hospitals Reporting

Level I and II:	10 facilities	48.6% of data
Level III:	10 facilities	14.7% of data
(Non-Trauma) Hospitals:	80 facilities	36.7% of data

ED Disposition = Transferred

Level III Trauma Centers- Average ED LOS (Hours)

	Level III	ID 109	ID 49	ID 68	ID 24	ID 74	ID 17	ID 19	ID 58	ID 54	ID 37
Upper CL	2.0	2.0	2.3	2.0	2.0	2.1	2.2	2.7	2.6	2.5	2.7
▲ Mean	1.9	1.6	1.7	1.7	1.7	1.8	1.8	2.0	2.1	2.1	2.7
Lower CL	1.7	1.2	1.1	1.3	1.4	1.5	1.5	1.4	1.6	1.7	2.7

Indiana Trauma Registry

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Non-Trauma Centers
Average ED LOS (Hours)

Indiana Trauma Registry

Statewide Quarter 3 Data Report
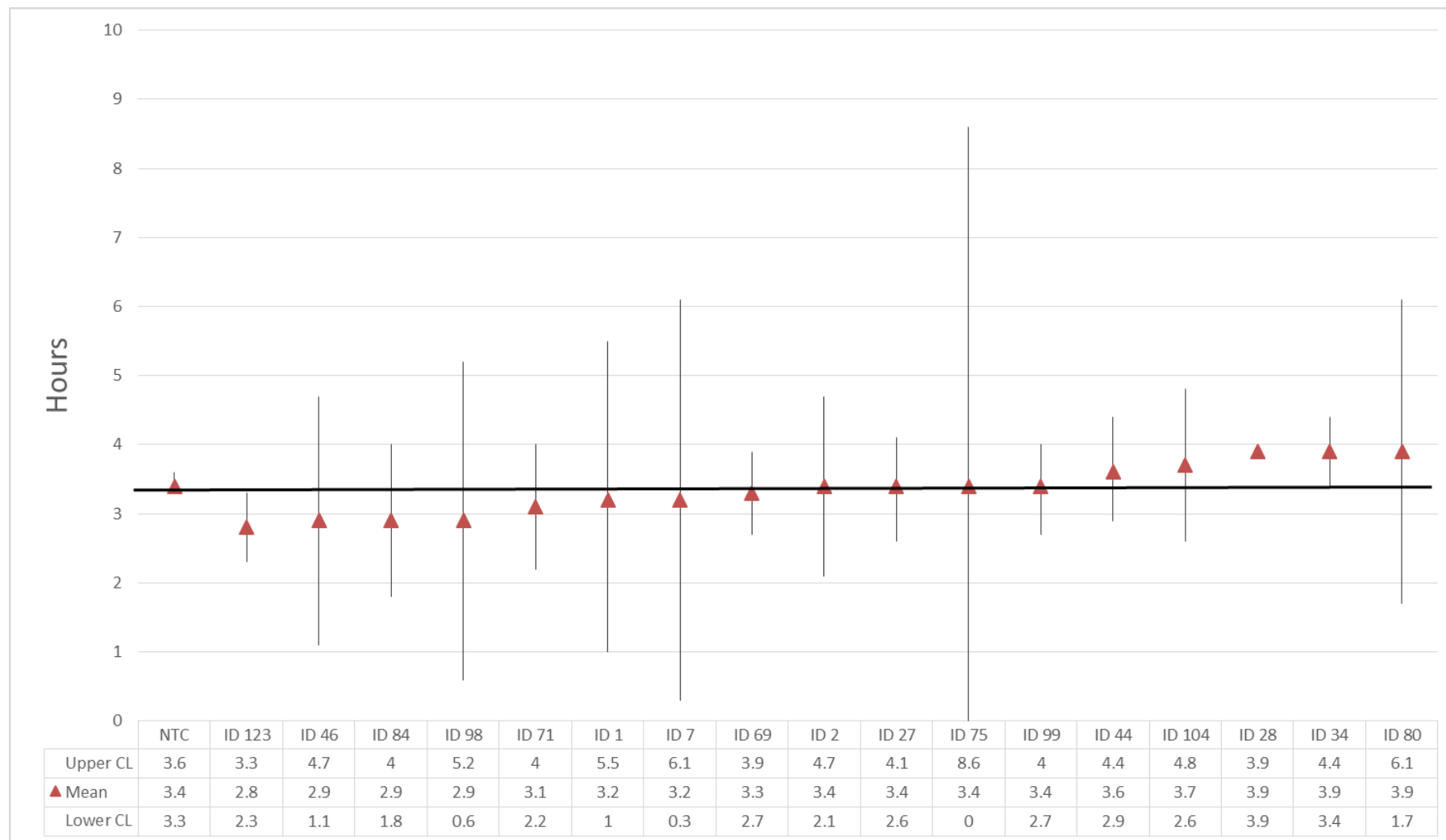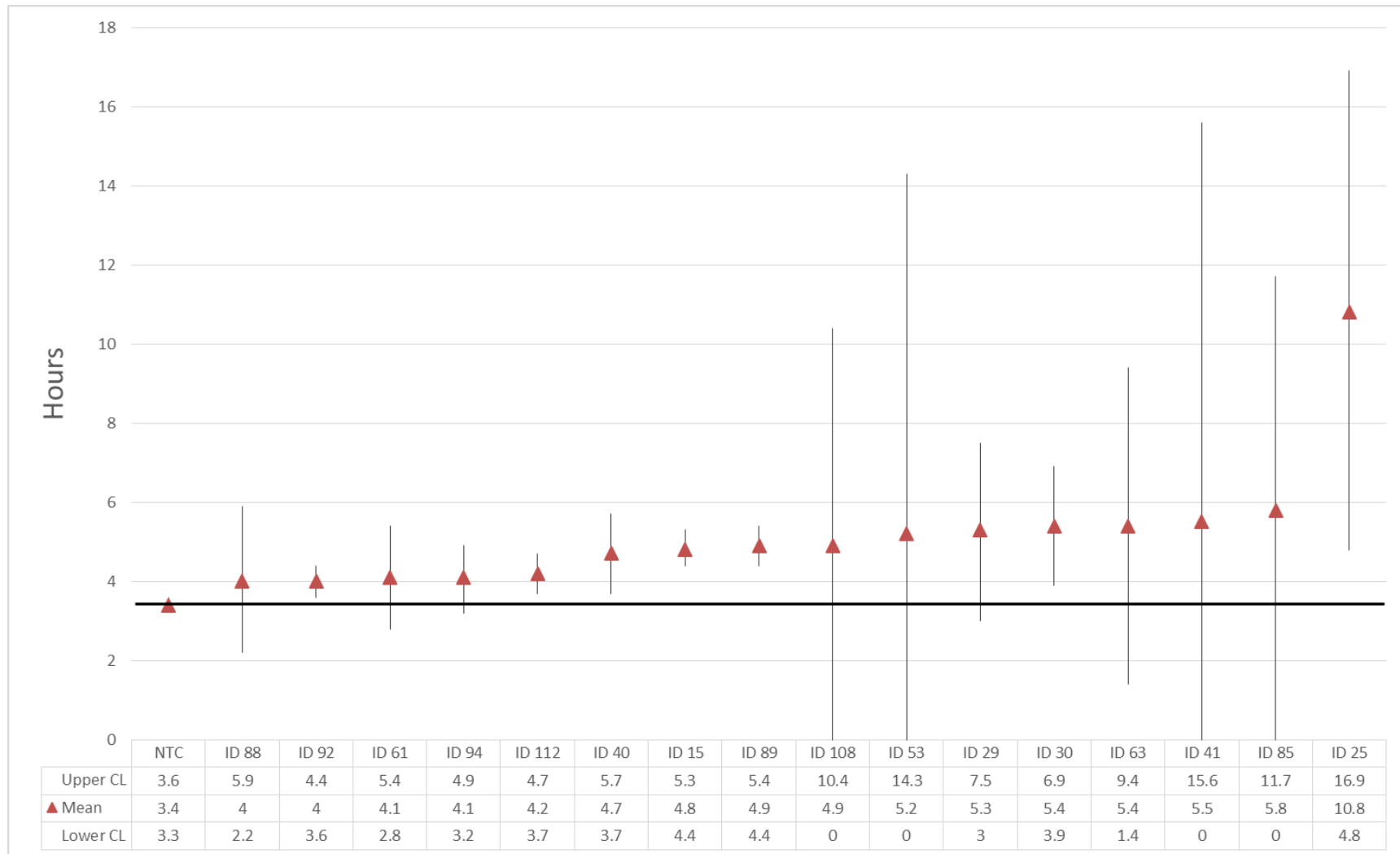July 1, 2016—September 30, 2016
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Non-Trauma Centers
Average ED LOS (Hours)

	NTC	ID 122	ID 111	ID 89	ID 32	ID 47	ID 83	ID 117	ID 34	ID 59	ID 70	ID 107	ID 113	ID 115	ID 119
Upper CL	2.7	3.6	1.7	2	2	2.2	2	1.9	2.1	2.2	2.1	1.7	1.9	2.1	2.2
▲ Mean	2.5	0.9	1.3	1.4	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Lower CL	2.3	0	0.9	0.9	1	1	1.1	1.3	1.2	1.1	1.3	1.7	1.4	1.3	1.3

Indiana Trauma Registry

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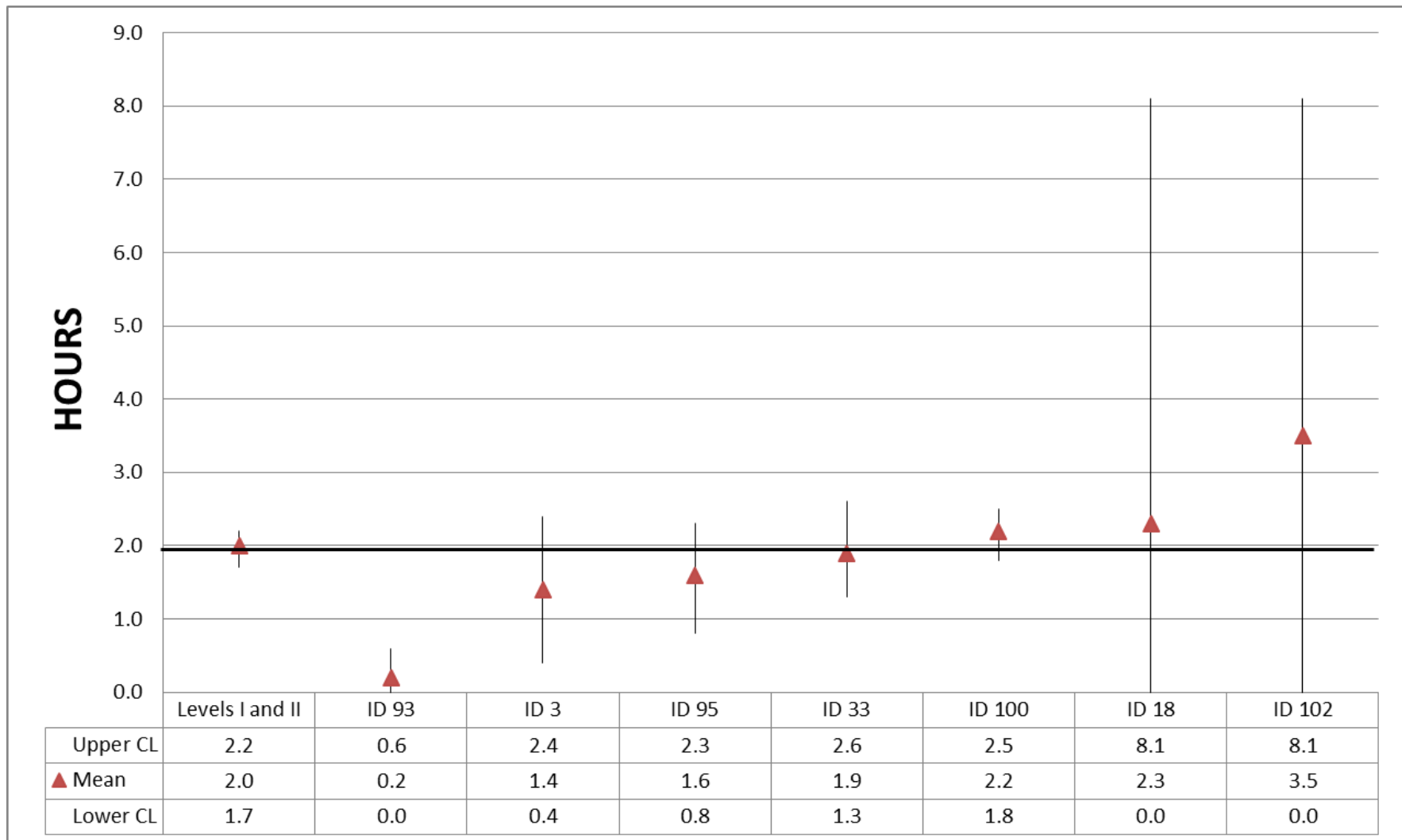|		
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ED Disposition = Transferred
Non-Trauma Centers
Average ED LOS (Hours)

	NTC	ID 15	ID 51	ID 92	ID 124	ID 5	ID 42	ID 61	ID 7	ID 11	ID 12	ID 86	ID 114	ID 125	ID 52
Upper CL	2.7	2.6	4	2.6	2.8	2.4	2.4	2.4	3.3	2.2	3	2.7	2.7	2.2	2.7
▲ Mean	2.5	1.9	1.9	1.9	1.9	2	2	2	2.1	2.2	2.2	2.2	2.2	2.2	2.3
Lower CL	2.3	1.2	0	1.2	1	1.5	1.5	1.6	1	2.2	1.4	1.7	1.6	2.2	2

Indiana Trauma Registry

Statewide Quarter 3 Data Report
July 1, 2016—September 30, 2016
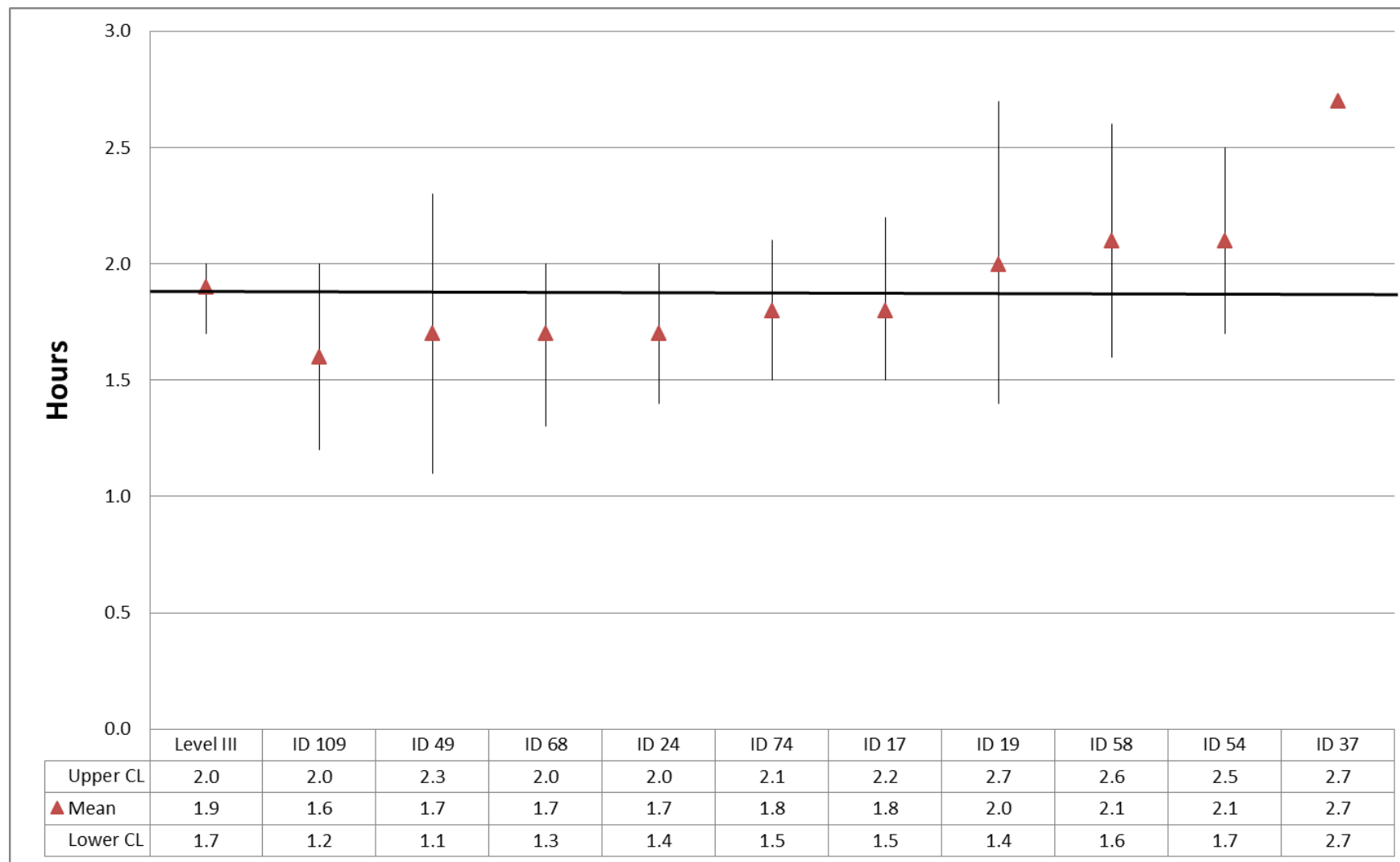### 10,494 Incidents

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Non-Trauma Centers
Average ED LOS (Hours)

	NTC	ID 23	ID 55	ID 98	ID 10	ID 31	ID 44	ID 72	ID 123	ID 2	ID 27	ID 62	ID 78	ID 46	ID 81
Upper CL	2.7	7.5	3.4	8.2	2.9	4.1	3.2	3.2	3.3	4.6	3.6	3.8	3.2	4.7	3.6
▲ Mean	2.5	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.6	2.8	2.8	2.8	2.9	2.9
Lower CL	2.3	0	1.3	0	2.2	1	1.7	1.9	1.7	0.7	2	1.8	2.4	1.1	2.3

Indiana Trauma Registry

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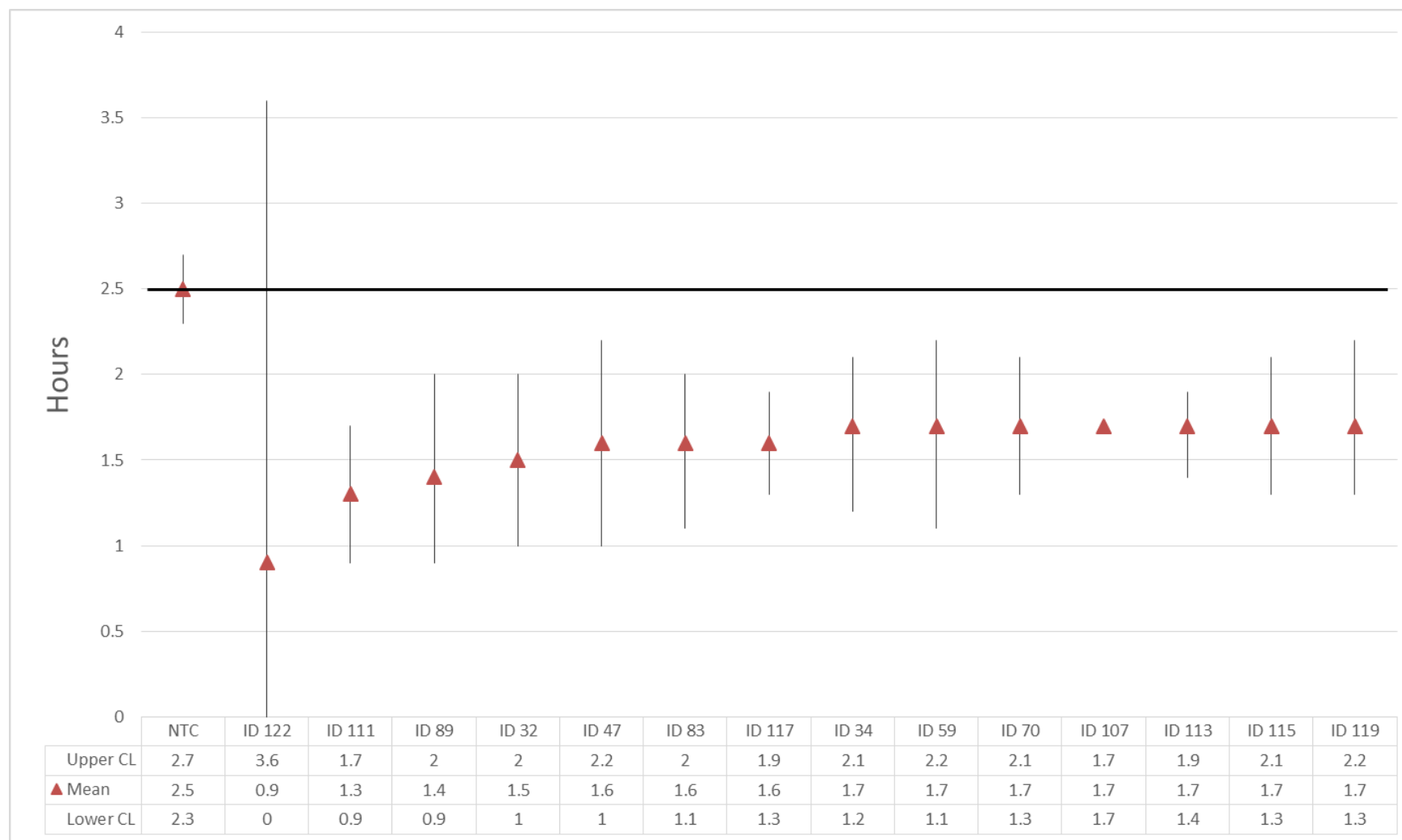|		
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ED Disposition = Transferred
Non-Trauma Centers
Average ED LOS (Hours)

	NTC	ID 84	ID 94	ID 99	ID 71	ID 75	ID 1	ID 85	ID 116	ID 80	ID 53	ID 108	ID 63	ID 29	ID 64
Upper CL	2.7	4	5.8	3.5	4.4	9.4	7.5	9.3	11.3	9.4	14.3	11.4	9.4	13.2	12.7
▲ Mean	2.5	2.9	3	3	3.4	3.5	3.7	4.1	4.3	4.7	5.2	5.2	5.4	5.7	12.7
Lower CL	2.3	1.8	0.3	2.4	2.4	0	0	0	0	0	0	0	1.4	0	12.7

Indiana Trauma Registry

Statewide Quarter 3 Data Report
July 1, 2016—September 30, 2016
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Critical Patients, ED Disposition = Transferred

Average ED LOS (Hours)

Indiana Trauma Registry

Statewide Quarter 3 Data Report
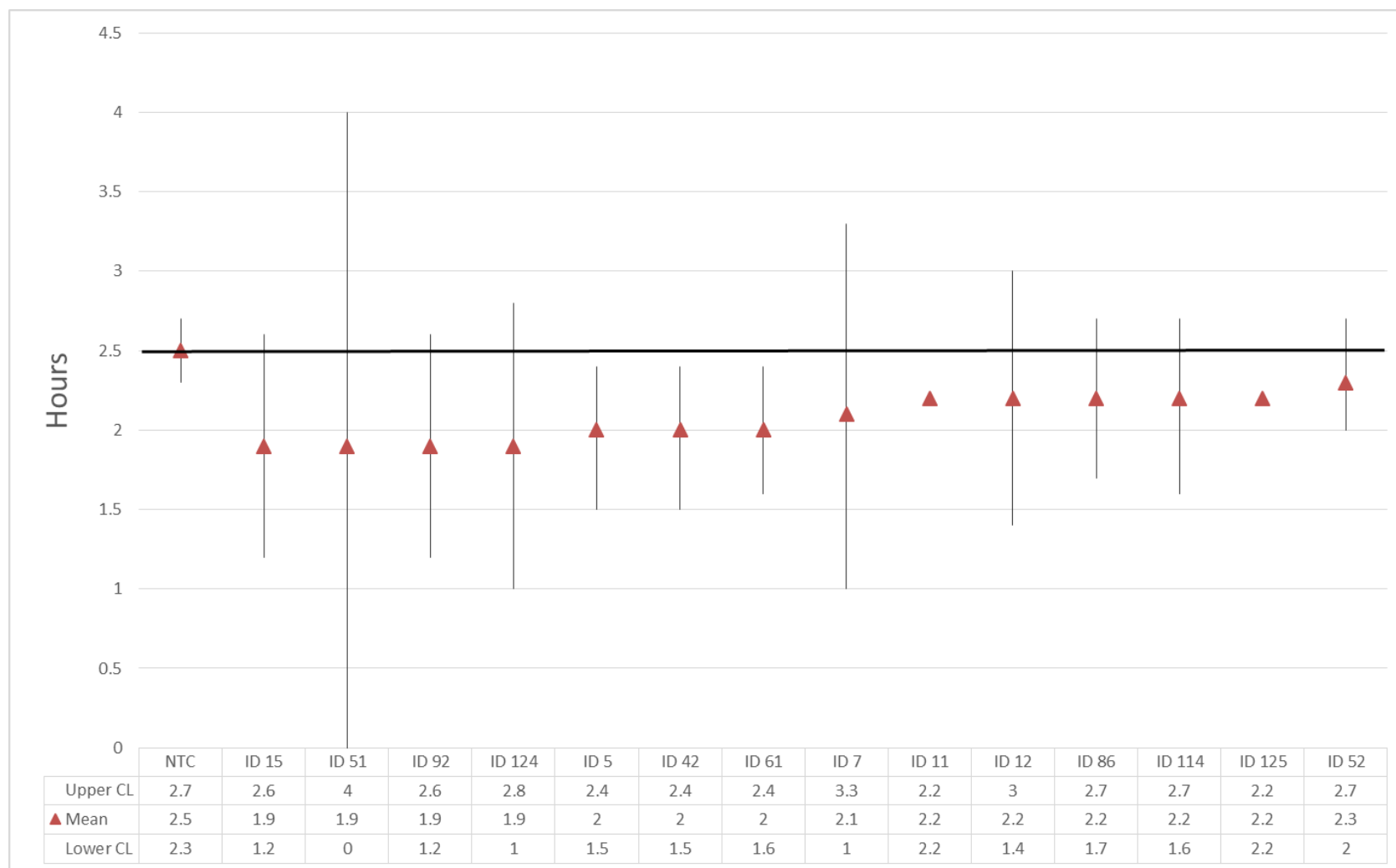July 1, 2016—September 30, 2016
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	Levels I and II	ID 93	ID 95	ID 33	ID 3	ID 18	ID 100	ID 102
Upper CL	2.5	0.6	3.2	2.9	6.4	8.1	3.5	3.8
▲ Mean	2.0	0.2	1.6	1.9	2.2	2.3	2.5	3.8
Lower CL	1.4	0.0	0.0	0.9	0.0	0.0	1.6	3.8

Indiana Trauma Registry

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Critical Patients, ED Disposition = Transferred

Level III Trauma Centers - Average ED LOS (Hours)

	Level III	ID 49	ID 17	ID 68	ID 109	ID 24	ID 19	ID 58	ID 74	ID 54	ID 37
Upper CL	1.7	1.4	2.3	1.6	1.6	1.8	2.2	2.5	2.2	2.5	2.7
▲ Mean	1.5	1.0	1.1	1.1	1.1	1.2	1.5	1.6	1.7	2.0	2.7
Lower CL	1.3	0.6	0.0	0.6	0.7	0.6	0.9	0.8	1.2	1.5	2.7

Indiana Trauma Registry

Statewide Quarter 3 Data Report
July 1, 2016—September 30, 2016
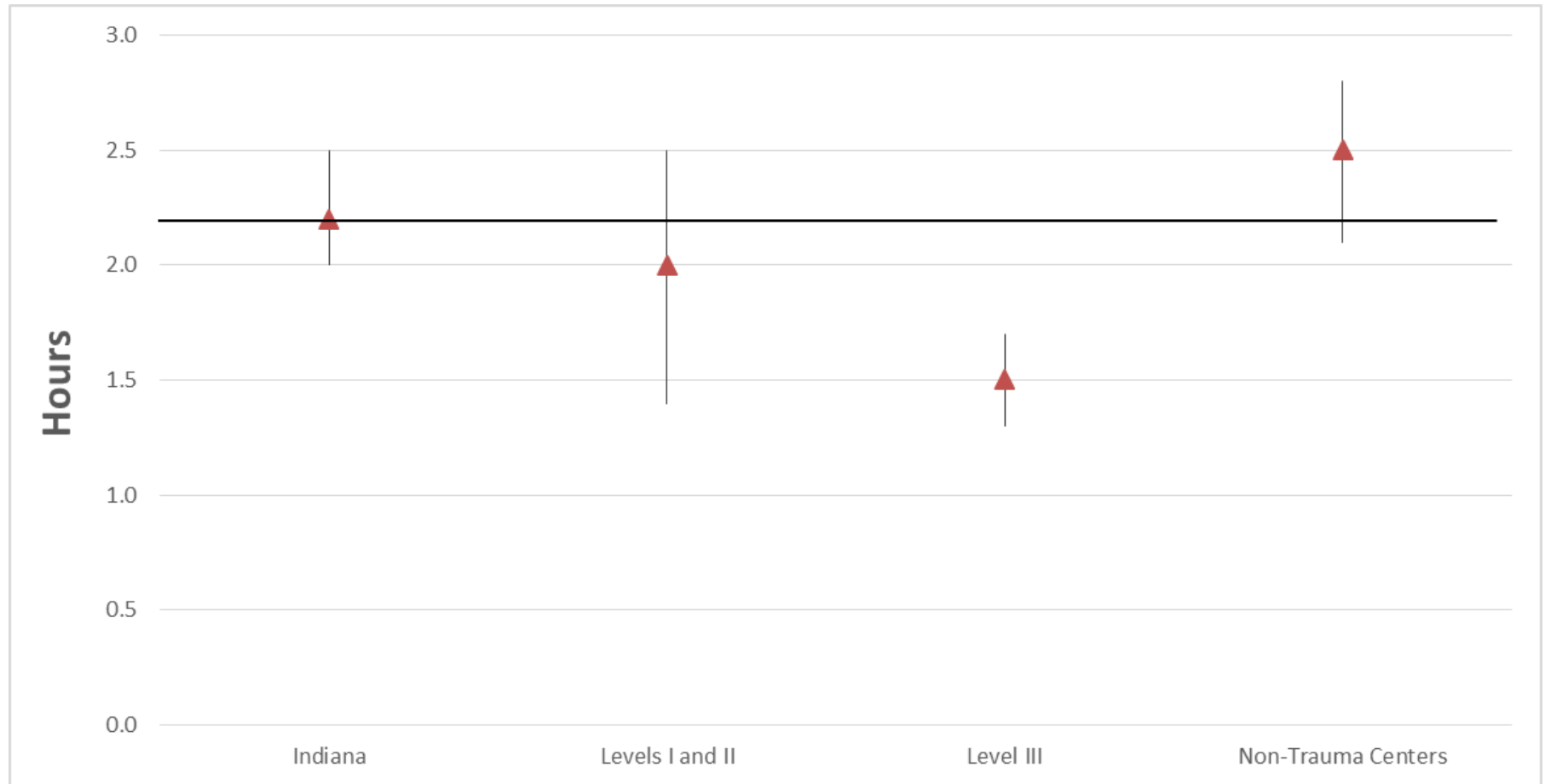**10,494 Incidents**

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Indiana Trauma Registry

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July 1, 2016—September 30, 2016
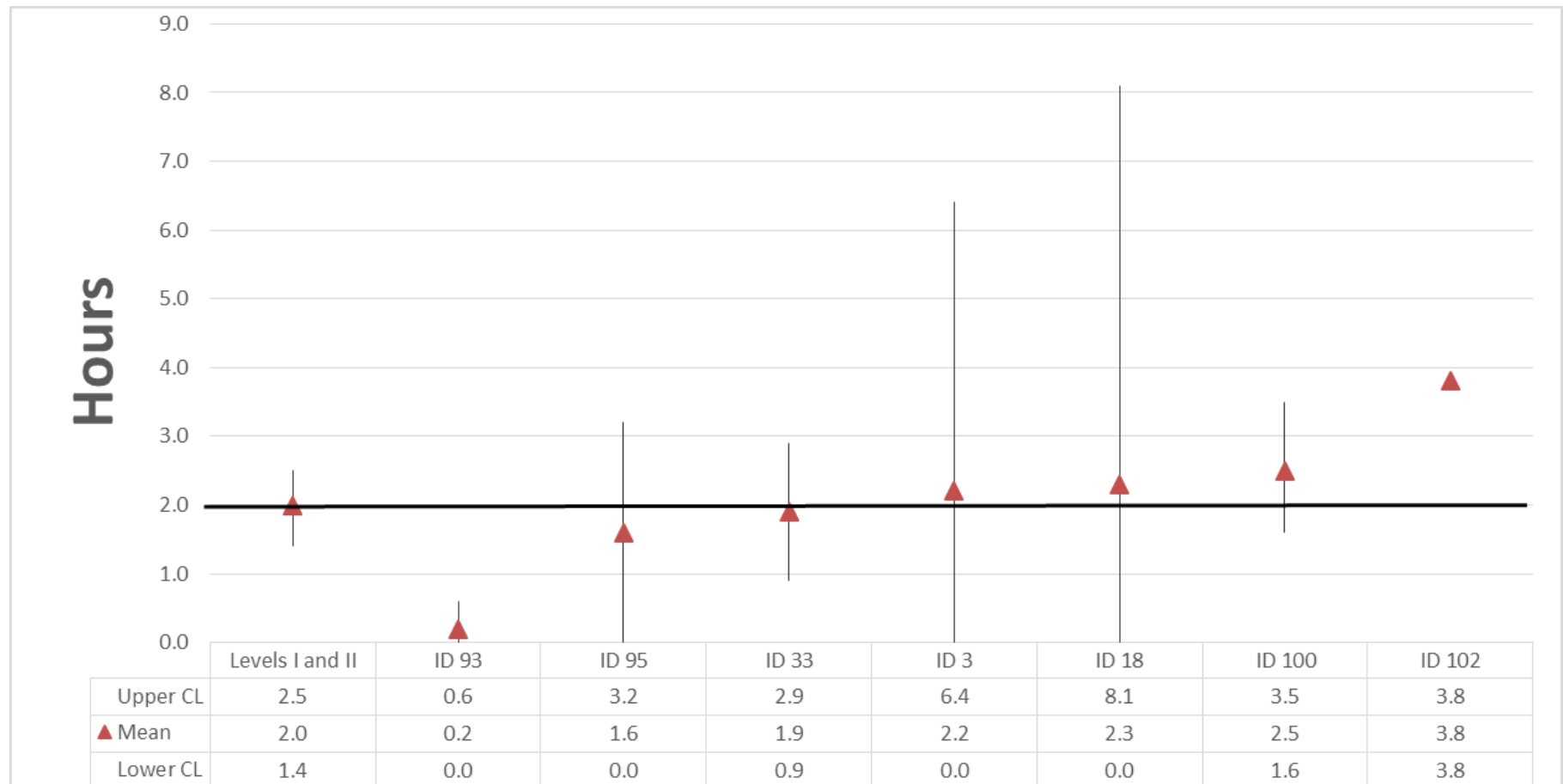**10,494 Incidents**

100 Total Hospitals Reporting

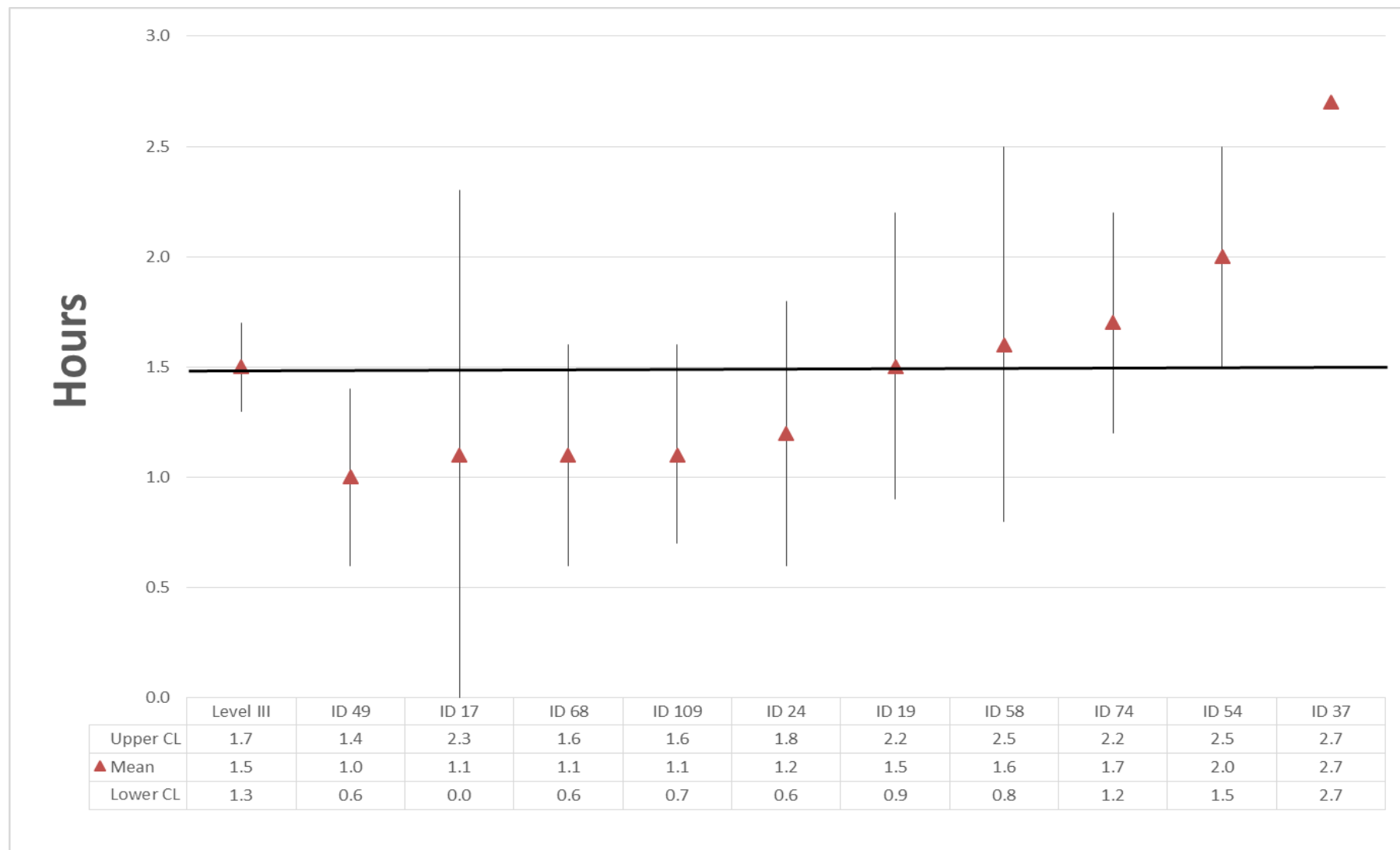|		
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Non-Trauma Centers - Average ED LOS (Hours)

	NTC	ID 12	ID 85	ID 92	ID 83	ID 86	ID 122	ID 53	ID 5	ID 89	ID 117	ID 119	ID 63	ID 15	ID 32	ID 94	ID 113
Upper CL	2.8	2.7	2.4	2.2	1.7	2.2	3.6	10.7	1.9	4.3	1.7	1.8	2.9	2.6	2	14.4	2.3
▲ Mean	2.5	0.7	0.7	0.7	0.8	0.8	0.9	1.2	1.3	1.3	1.3	1.3	1.4	1.5	1.5	1.5	1.5
Lower CL	2.1	0	0	0	0	0	0	0	0.8	0	0.9	0.8	0	0.5	1	0	0.8

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Critical Patients, ED Disposition = Transferred
Non-Trauma Centers - Average ED LOS (Hours)

	NTC	ID 114	ID 47	ID 31	ID 107	ID 2	ID 7	ID 44	ID 70	ID 42	ID 72	ID 115	ID 124	ID 55	ID 59	ID 111	ID 52	ID 11
Upper CL	2.8	2.6	3	3.3	1.7	3.7	3.5	2.4	2.4	2.4	4.2	2.5	2.8	2.8	6.6	3.2	3	2.2
▲ Mean	2.5	1.5	1.6	1.7	1.7	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2	2	2	2.1	2.2
Lower CL	2.1	0.4	0.2	0.1	1.7	0	0.2	1.2	1.3	1.4	0	1.3	1	1.1	0	0.8	1.2	2.2

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Critical Patients, ED Disposition = Transferred
Non-Trauma Centers - Average ED LOS (Hours)

	NTC	ID 61	ID 78	ID 10	ID 34	ID 23	ID 46	ID 123	ID 62	ID 81	ID 84	ID 99	ID 27	ID 75	ID 71	ID 1	ID 108	ID 116
Upper CL	2.8	4	3.2	3.1	3.3	7.5	2.5	17.5	3.8	4.2	4.4	3.9	4.4	9.4	4.9	15.6	11.4	15.4
▲ Mean	2.5	2.2	2.2	2.3	2.3	2.4	2.5	2.6	2.8	2.9	2.9	2.9	3.1	3.5	3.6	5	5.2	5.5
Lower CL	2.1	0.4	1.2	1.5	1.3	0	2.5	0	1.8	1.5	1.3	1.9	1.9	0	2.3	0	0	0

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ED Length of Stay

ED Length of Stay (minutes)				
	Indiana Average	Level I and II	Level III	NTC
N=	3026	248	483	2295
Average	181	154	121	197
Std. Deviation	168	131	79	181
Minimum	0	2	1	0
Quartile 1	142	131	150	150
Median	148	129	107	160
Quartile 3	296	311	288	288
Maximum	2362	814	693	2362

ED Disposition

ED Disposition (count)				
	Indiana	Level I and II	Level III	NTC
Floor Bed	4489	2176	660	1653
ICU	1334	1109	112	113
Transferred	1891	108	346	1437
OR	921	692	139	90
Home w/o Services	340	179	46	115
Observation	460	274	51	135
Step-Down	530	273	97	160
Expired	63	38	6	19
NK/NR/NA	407	224	82	101
AMA	11	7	2	2
Home w/ Services	20	3	0	17
Other	28	16	5	7
Grand total	10494	5099	1546	3849

*A bar graph of ED Disposition is found on page 2.
*A bar graph of ED Length of Stay is found on page 2.

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ED Length of Stay by ISS

ED Length of Stay (minutes)								
ISS Category	Indiana Average	Indiana Average	Level I and II	Level I and II	Level III	Level III	Non-Trauma Centers	Non-Trauma Centers
	Counts	**Minutes**	**Counts**	**Minutes**	**Counts**	**Minutes**	**Counts**	**Minutes**
1-8	1769	187.3	209	159.8	256	128.2	1304	202.6
9-15	1009	180.6	45	168	185	128.7	779	192.7
16-24	133	138.4	7	190.1	51	87.2	75	169.8
25-44	65	73	20	78.3	23	64.2	22	77
45-74	4	44.3	1	37	3	46.7	0	-
75	5	62.5	3	77.3	2	18	0	-
No ISS	235	201.8	0	-	5	124.4	230	203.5

*A Box and Whisker plot of ED Length of Stay by ISS is found on page 5.

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ED Disposition (count) by ISS Category

	Floor Bed	ICU	Transferred	OR	Observation	NK/NR/NA	Step-Down	Home w/o Services	Expired	Other	AMA	Home w/ Services	Total
1-8	2156	338	1059	421	351	179	252	299	12	19	9	13	5108
9-15	1908	461	529	288	94	189	181	28	11	4	1	2	3696
16-24	159	310	116	84	8	12	61	2	10	0	0	1	763
25-44	24	195	46	104	0	6	18	0	19	0	0	2	414
45-74	1	13	2	13	0	1	0	0	3	0	0	0	33
75	1	12	1	5	0	0	0	0	4	0	0	0	23
NO ISS	240	5	138	6	7	20	18	11	4	5	1	2	457
Total	4489	1334	1891	921	460	407	530	340	63	28	11	20	10494

*Bar graph of ED Disposition by ISS is found on page 22.

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General Report: